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FALL 1989

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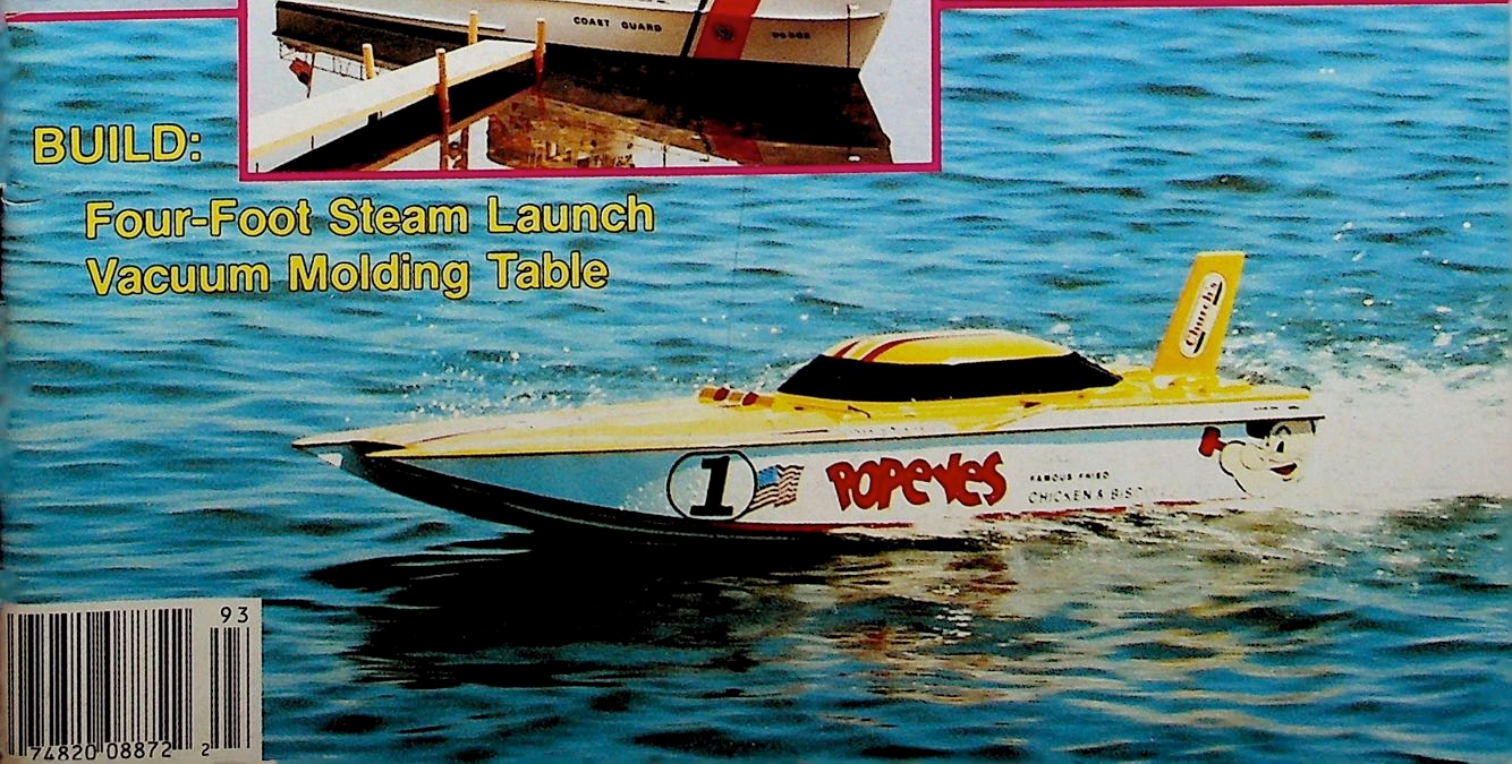

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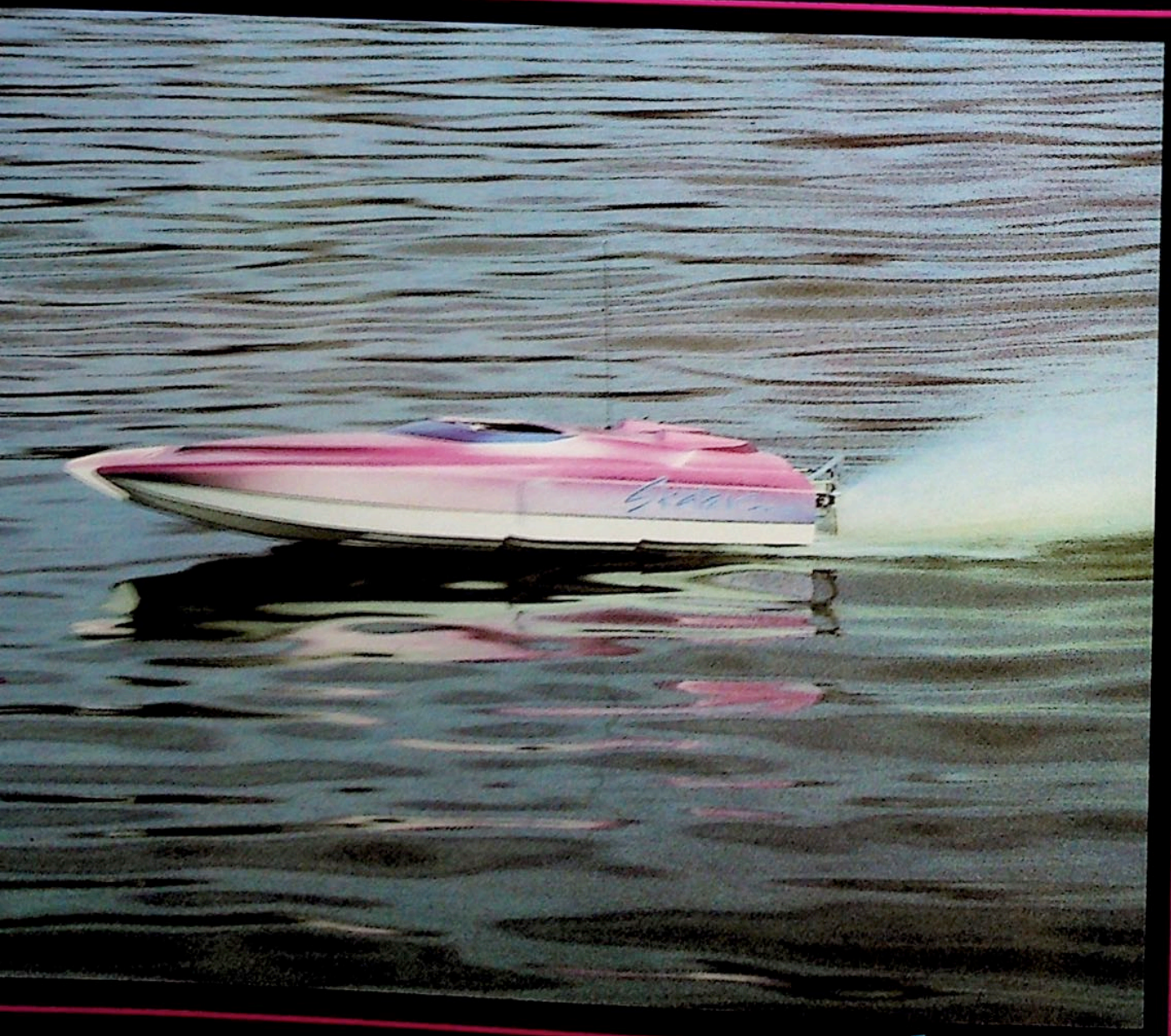

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Requires 2 channel R/C system.

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Become a part of this important harbor crew. You'll build the Fireboat with Micro-Cut Quality Basswood & Balsa parts, die-cut frames, deck & pilothouse, sheet balsa planking, cast metal britannia fittings, brass portholes and brass railings.

Adaptable to electric power with Running Hardware Kit #826 and MEPS-I Power System #845.

To operate this model with two working fire monitors, you will need

U.S. BOAT & SHIP MODELER

FALL 1989

volume 3, number 10

Corporate Office: 898 West Sixteenth St., Newport Beach, CA 92663 Ph. (714) 645-8830

DEPARTMENTS

CAP'N'S LOG, Bill Northrop 6
R/C POWER BOATS, Jerry Dunlap 18
INDUSTRY SCUTTLEBUTT, Ralph Warner 32
THE MODEL SHIPWRIGHT, Peter Sorlien 34
BOOKS, Peter Shreeves 42
SHIP'S STORE 46
RADIO WAVES, Eloy Marez 62
STRICTLY SAIL, Rod Carr 64

FEATURES

RUSSIAN OSA MISSILE BOAT, Walt Musciano 14
WOOD BENDING TECHNIQUES, Bud Crosiere 30
JOHN SPANGLER MEMORIAL REGATTA, Bob Preusse 36
COMBAT WARSHIPS IN ACTION, Stan Watkins 38

CONSTRUCTION

VACUUM MOLDING TABLE, Ron Williams 10
PUFF, R/C STEAM LAUNCH, Fred Lehmberg 22

SCALE VIEWS

KUTER RATOWNICZY R-33, Modelarz 68

Cover: At the top is the start of an R/C Unlimited race in Marysville, Washington, described further in Jerry Dunlap's "R/C Power Boats" column. Sal Castell's Coast Guard Patrol Boat is in the center described in "Cap'n's Log," as is the 1987 offshore racing champion by D.M. Cross, to its right. At the bottom is the offshore racer "Goodyear," the latest large-scale race boat model from International Hobbies, further details in "Ship's Store."

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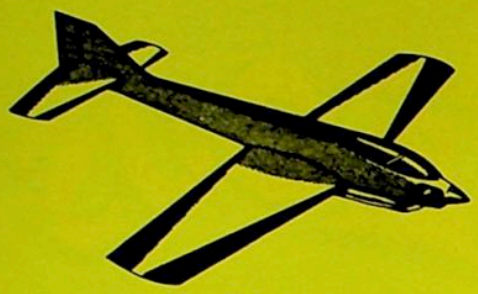

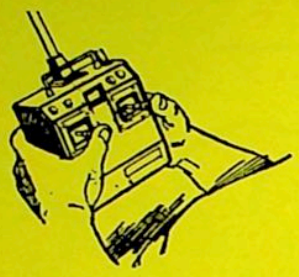

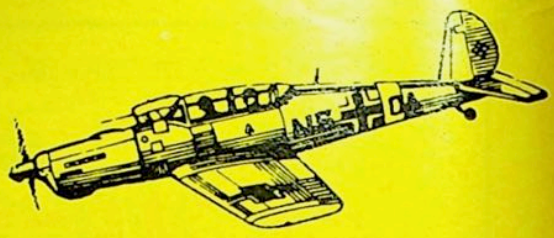

INTERNATIONAL IMS MODELER SHOW

THE THIRTEENTH ANNUAL
MODEL SPORT & HOBBY SHOW

INDUSTRY MEMBERS ONLY — FRIDAY, JAN. 12, 1990, 9 am-2 p.m.

NEW

GENERAL PUBLIC — FRIDAY, JANUARY 12, 1990, 2 p.m.-7 p.m.
GENERAL PUBLIC — SATURDAY, JANUARY 13, 1990, 10 a.m.-6 p.m.
GENERAL PUBLIC — SUNDAY, JANUARY 14, 1990, 10 a.m.-5 p.m.

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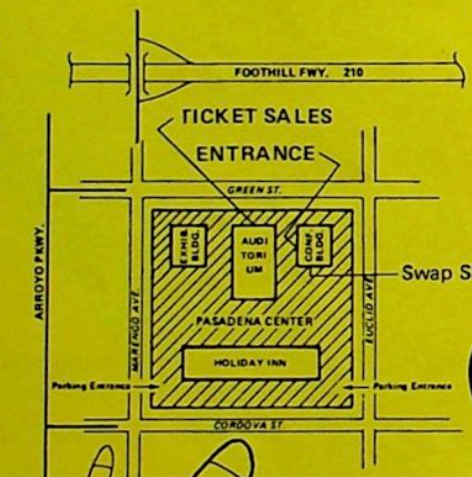
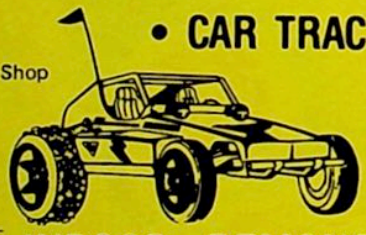


• CAR TRACK • **• BOAT POND •**



INDOOR DEMONSTRATIONS
STATIC DISPLAY COMPETITION IN MANY CATEGORIES

BIGGEST & BEST in the WEST!

SEE INDOOR R/C BLIMP, BALLOON, CAR, AND BOAT DEMONSTRATIONS

ADMISSION: Adults $5.00, Juniors (12 and under) $4.00. Children under six admitted free when accompanied by an adult.

• GIANT RAFFLE • • SWAP SHOP •

SWAP SHOP: Bring your saleable items to the Swap Shop. NO DEALERS, PLEASE! Table rent; $30.00 for two days, includes one admission. You are responsible for your own sales. IMS is not responsible for lost or stolen items.

ADVANCE TICKETS: Save time and waiting in line. Order your tickets in advance. U.S. only. Send check or money order payable to IMS, Inc. (Allow 3 weeks for checks to clear), and include self-addressed legal-size stamped envelope. One adult ticket $5.00, under 13—$4.00, (no charge under age 6).

STATIC MODEL COMPETITION: Entry is free, open to all ages, no limit on number of categories entered per contestant, but only one entry per category. Contestant must be builder of model. Trophies and ribbons awarded in over 50 categories. Send SASE to IMS office for list of categories, competition rules, and advance entry form.

GIANT RAFFLE: Radio control systems, kits, engines, etc., to be raffled off during show. Big prize numbers to be announced, numbers for smaller prizes to be posted. New tickets sold each day. No carry-overs. Prizes must be claimed at show. Another ticket drawn if big prize is not claimed. Proceeds donated to charitable organizations.

Bring your children, so they can learn to build and fly a MODEL AIRPLANE during the show!

MODELER SHOW Office: P.O. Box 10127, Costa Mesa, CA. Ph: (714) 548-4700

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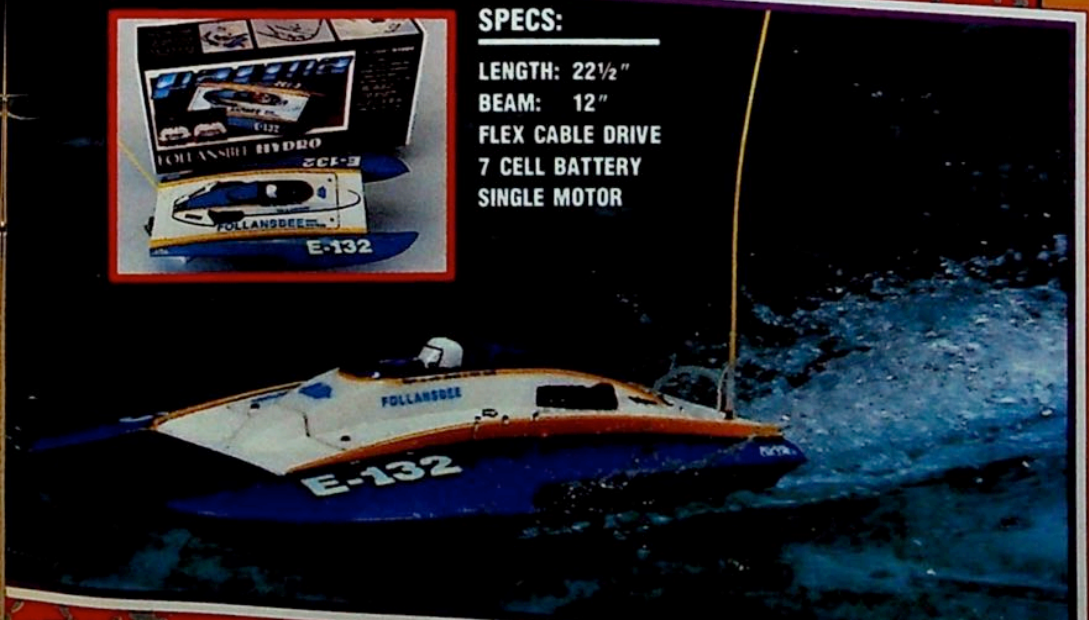
Makes Some Waves

SPECS:

LENGTH: 25"
BEAM: 8½"
SURFACE DRIVE
FLEX CABLE DRIVE
6 CELL BATTERY
SINGLE MOTOR

SPECS:

LENGTH: 22½"
BEAM: 12"
FLEX CABLE DRIVE
7 CELL BATTERY
SINGLE MOTOR



SKI TIGER

Parma's New Ski Tiger kits define the term "fast electric" boats. A modified vee-hull design has been coupled with the latest surface-drive technology to produce a truly explosive performance package! The rugged, vacuum-formed, ABS plastic kits are available in basic, deluxe, and supreme versions. Also available separately; all four hull components in durable, paintable lexan! Get out of "dry dock" and make some waves of your own with the fast, easy to assemble **Parma Ski Tiger!**

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Brand new for electric boat enthusiasts is the **Follansbee Hydro kit.** A 1/10 scale replica of the 5 litre hydro sponsored by the Follansbee Dock Systems Co. of Follansbee, West Virginia. The innovative lexan hull design gives you total freedom for painting, ease of assembly and high impact resistance. This sleek craft comes with all the colorful mylar decals necessary to duplicate the real thing. Available in basic, deluxe, and supreme versions, **Parma's Follansbee Hydro** is your ticket to high speed water action!

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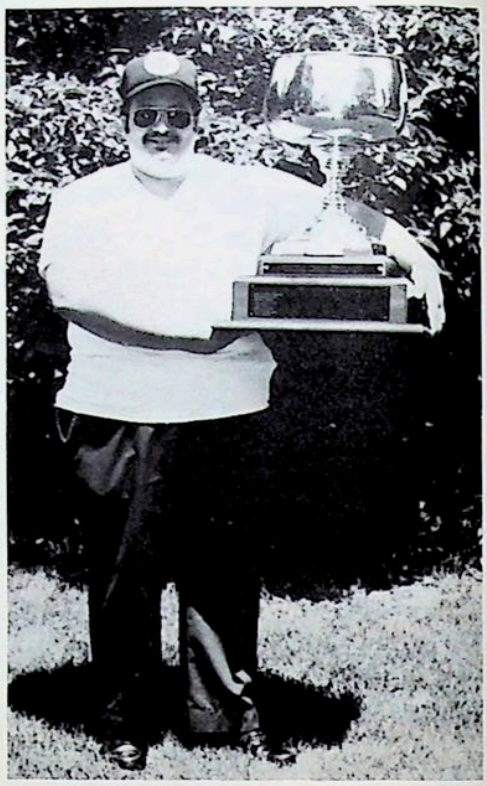
CAP'N'S LOG

By BILL NORTHROP . . .



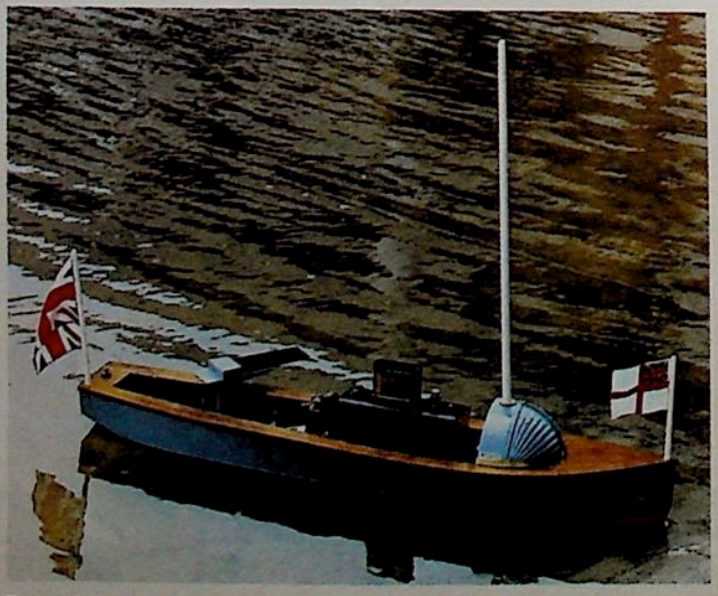
Sal Castelli, whose "mystery" Coast Guard patrol boat appeared in our last issue, with his Master Modeler award. See text.

Notices have gone out and reservations are already coming back from exhibiters for booth spaces at the 1990, Thirteenth Annual, IMS Pasadena Model Sport and Hobby Show on January 12, 13, and 14, 1990. Because of the steadily increasing crush of people traffic, which this year resulted in the ticket office having to be closed temporarily at 1:30 on Saturday until some spectators had departed, Friday schedule has been changed for 1990.

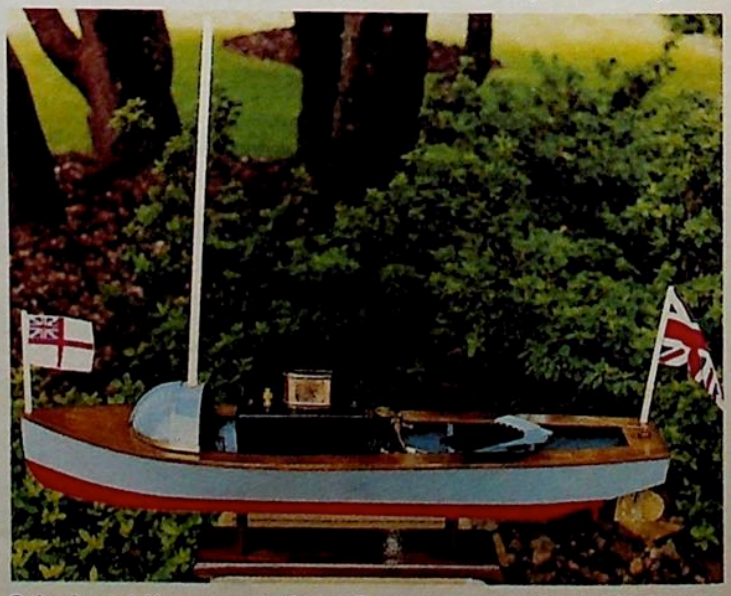
Instead of all day Friday being closed to the public while dealers and distributors visit the show exhibitors to examine new products and place orders, it will now be open for the industry-only from 9:00 a.m. until 2:00 p.m. Then at 2:00 p.m., the general public will be admitted until show closing at 7:00 p.m. Saturday and Sunday will continue on the same schedule as in the past . . . 10:00 a.m. to 6:00 p.m. and 10:00 a.m. to 5:00 p.m. respectively.

In addition to the schedule change, two other steps have been taken because of the crowded conditions. The hallway between the two exhibit buildings will no longer include manufacturers' booths, as the bottleneck developed by people gathering at the booths has created both an inconvenient and potentially dangerous traffic jam in this busy walkway and

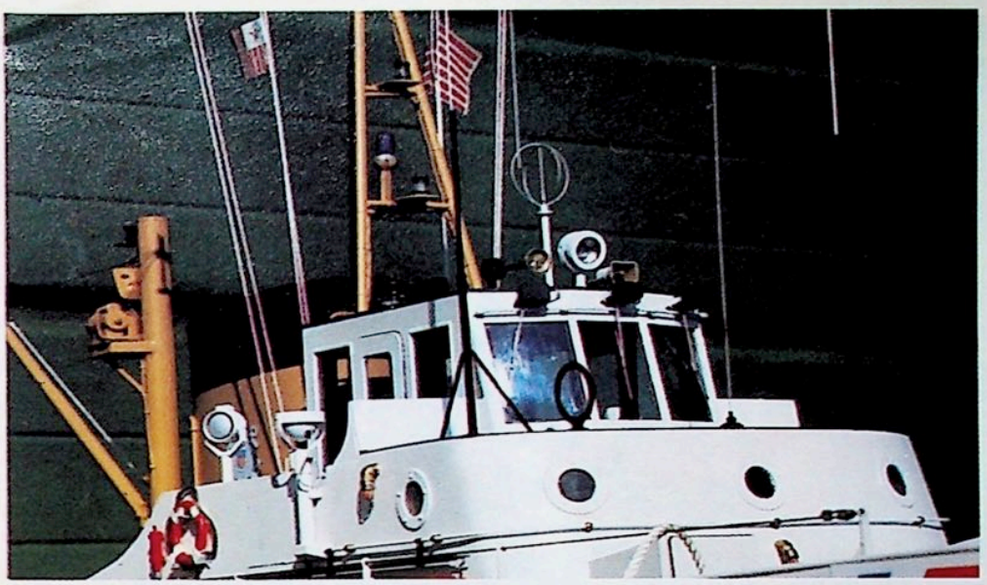
Sal Castelli's 48-inch long, 3/4" + 1' scale U.S. Coast Guard 95-foot patrol boat, which also appears on our cover. Full details on this scratch-built model in text.



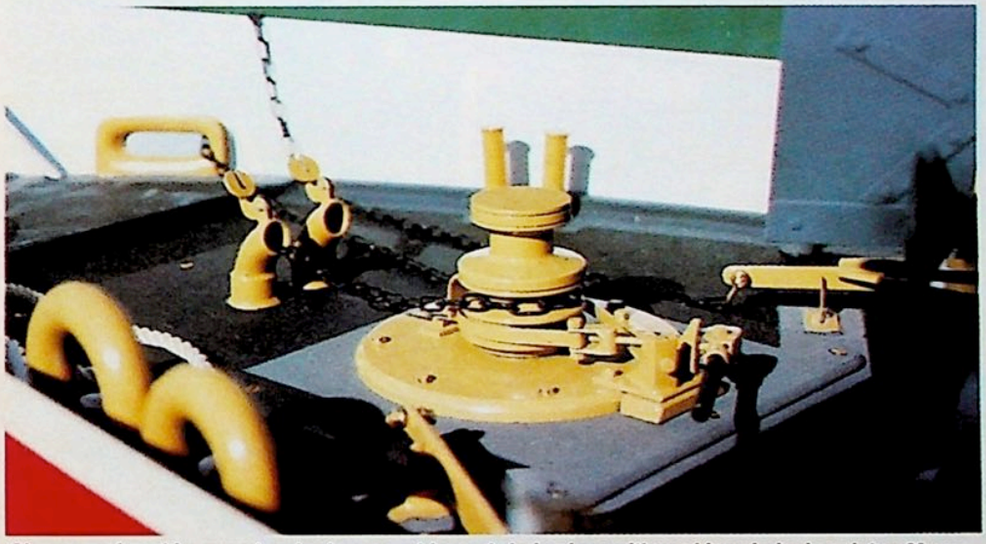
Turn-of-the-century British river gunboat modeled by Richard Cohen is rather obscure both in reality and in plans info.



Cohen's model is powered by Stuart-Turner steam engine. Model information available directly from him. Refer to column for more.



Close-up of cabin superstructure on Sal Castelli's Coast Guard patrol boat. Detailed information came first-hand as explained by Sal in letter to *USB&SM.*



Close-up of working capstan, brake assembly, and chain pipes with working chain dog plates. Many original model details had to be reworked after Sal had opportunity to photograph real thing.

exit area.

It has also become necessary, again because of the crowding and potentially dangerous traffic jam, to discontinue the indoor flying demonstrations put on by the Black Sheep Squadron of Burbank, California. Indoor flying demonstrations were pioneered by the International Modeler Show at its second annual in 1979, when electric powered R/C record trials were put on during the show. Obviously, these were not official record trials, as no such category existed, but aside from the interest developed in electric powered model flight, it was a great "gimmick" to promote the show. The following year, Tony Naccarato put up a flight of one hour and 32 minutes, which may still stand as an all-power, no-thermal record flight for electric powered model aircraft. In the following years, Tony and his mother, Addie Mae, brought the Burbank model club, known as the "Black Sheep Squadron," to the show to demonstrate indoor free flight models and electric powered control line models in action, It has been a star attraction of this and the IMS Atlanta show ever since. In the last few years, however, as the Pasadena show has continued to grow, the traffic congestion created by spectators at the twice-a-day demonstrations has become an increasing concern of IMS, Pasadena Center, and Fire Department officials, to the extent that the cancellation has become necessary. It should go without saying that if there was a larger facility available in the same geographical area and the same nonconflicting time slot, IMS would have taken the steps to relocate.

Incidentally, the car track and boat pond demonstration facilities will continue to be set up in approximately the same locations as the past few years. The boat pond measures 32 by 32 feet, with about 12 to 18 inches of depth, and manufacturers as well as local modelers are invited to run their boats for the pleasure of the spectators. Obviously, power is limited to electric, and scale and racing boats will not be allowed to run at the same time! Fans can be provided for sailboats, but we'll need to know ahead of time that "a light offshore breeze is requested."

The only other significant change in the show relates to the Giant and Continuous Raffles. To create more recognition for the donors of raffle prizes, and more excitement for the holders of raffle tickets, all prizes, big and little, expensive and inexpensive, will be given out during the show. Big prize drawings will be announced as

Toronto, Canada's last steam-powered tug. Photo by Bill Hood, courtesy of JBC Visuals, Toronto on a postcard furnished with scale drawings from Taubman Plans Service.

drawn, and small prizes will be posted, as in past years, however, as new tickets will be sold for each day of the show, winners of big prizes must be present to claim prizes or another drawing will be made.

Other than the above changes, the "Baker's Dozenth" IMS Pasadena show will be the same as in the past few years, with the entrance being through the west doors of the Conference Building; a short walk to the left from the ticket booths at the auditorium entrance facing on Green Street. See ya there!

NORTHWEST EXPO

While we're on the subject of model hobby shows, the second show of the 1990 season will be the Ninth Annual Northwest Model Exposition, February 3 and 4, 1990, at the Puyallup Fairgrounds, Puyallup, Washington, put on by the Mount Rainier Radio Control Society. Keep your eye peeled for an ad to appear in this magazine, with further details. In the meantime, if you're a manufacturer wishing to exhibit at the Expo, write to Bob Ford, at P.O. Box 73939, Puyallup, WA 98373, for further information.

N.C. EXPO

The Sixth Annual North Carolina Model & Hobby Show will be held on Saturday and Sunday, November 4 and 5, 1989, at the Charlotte Merchandise Mart, E. Independence Blvd., Charlotte, N.C. Included in the static model competition are nine R/C and three static model boat categories. For more information send an SASE to Carolina Hobby Expo, 3452 Odell School Rd., Concord, NC 28025.

BUILDER FOUND

In the Summer issue, we published a photo of a scale model of a 95-foot U.S. Coast Guard patrol boat, which was on display in the static model competition at the 1989 WRAMS model hobby trade show in White Plains, New York, and we mentioned that our notes on the builder, etc., had been misplaced. Sure enough, a nice letter arrived soon after from that builder, Salvatore Castelli, of Centereach, New York. About this model, he said," The keel was laid in 1978 and construction progressed slowly until the summer of 1986. At that time, after contacting personnel at a local

Model of 40-foot Coast Guard Utility Boat scratch-built to 3/4-inch scale by Robert Klubertanz, of Holmen, Wisconsin. Doorknob latch on cabin door is operational. See text.

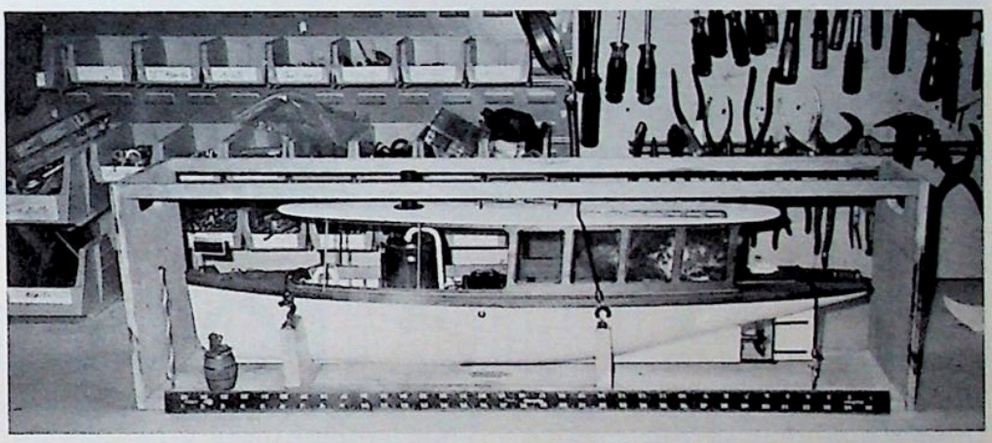
Scale "Cobra 63" offshore racer by D.M. Cross, England, won 1987 O.M.R.A. championships. Model sits deep in water, per scale, at low speeds. More details in column.

At full throttle, Cobra is up and out, tracks smooth, rides flat, hits 30+ mph.

On the open sea in Poole Harbor, Dorset, England, D.M. Cross takes his Kawasaki-powered Cobra on a trial run. He won the 1988 Offshore Model Racing Association championships with a 72-inch long "Cigarette" scale boat with similar power.

Coast Guard station, I was informed that there was a 95-foot boat still in commission at the Rockaway, N.Y. station. I brought the semi-completed model to the Rockaway station and requested permission to photograph the full size craft for documentation. However, the commander did that request one better and invited me to not only photograph the boat, but also take a short cruise around Manhattan! Don't get me wrong, the cruise wasn't just for me but was set up to take a group of disadvantaged children for an outing on the water. Swell guys, these Coast Guard types.

"While taking photos of the details aboard, I realized that many parts that were already constructed were not to scale. Upon returning home, a major reconstruction effort was initiated, the result is the model as you see it. The model is completely scratch built to a scale of 1/2" = 1'. *(Taubman has plans in 1/4" scale. wcn)* This scale gave me a manageable 48-inch hull length to work with. Construction was completed as shown in 1987. The hull is plank-on-frame construction and boat is operated with a Futaba seven-channel radio, on a surface frequency of course."

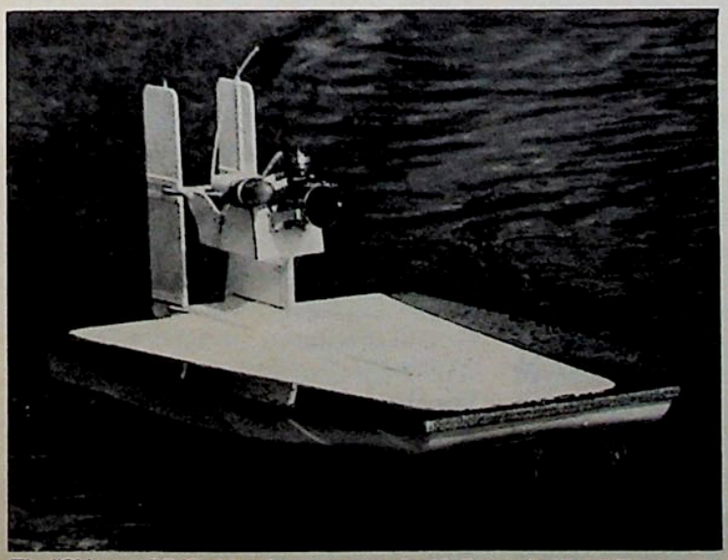


Glen Elliot, Houston, Texas, has his steam-powered Patricia, built from Hobby Lobey/Krick kit, fired up on the workbench. Note vapor cloud coming from outlet.

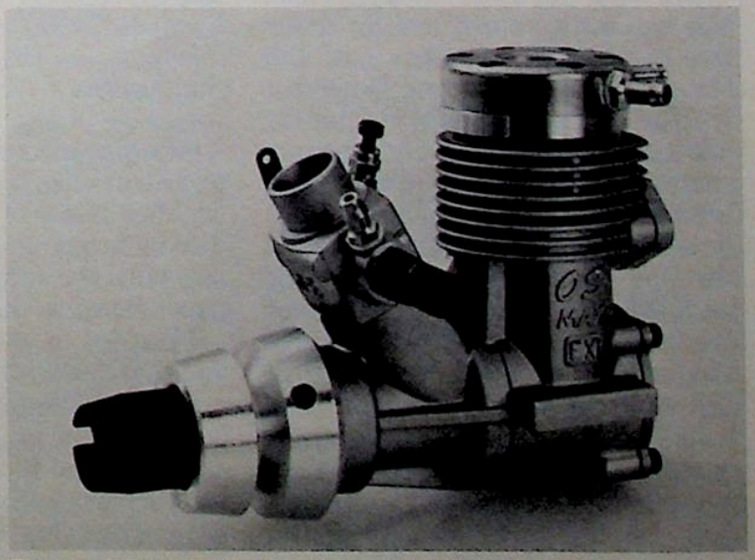
Those who would lift their noses at R/C vs. static models for scale detail should check the following list of features on Sal's boat:

Twin Dumas 12-volt motors
Diesel engine sound system
Air horn sound system
Operating siren
Rotating radar antenna
Rotating anemometer

Continued on page 79



The "Skimmer" R/C airboat can swap ends at full speed without flipping. By Robinaire, in Florida. More details in text.



The new O.S. 21 EX-M, with water-cooled cylinder head, ABC, Schneurle porting, puts out 1.65 bhp at 28,000 rpm.

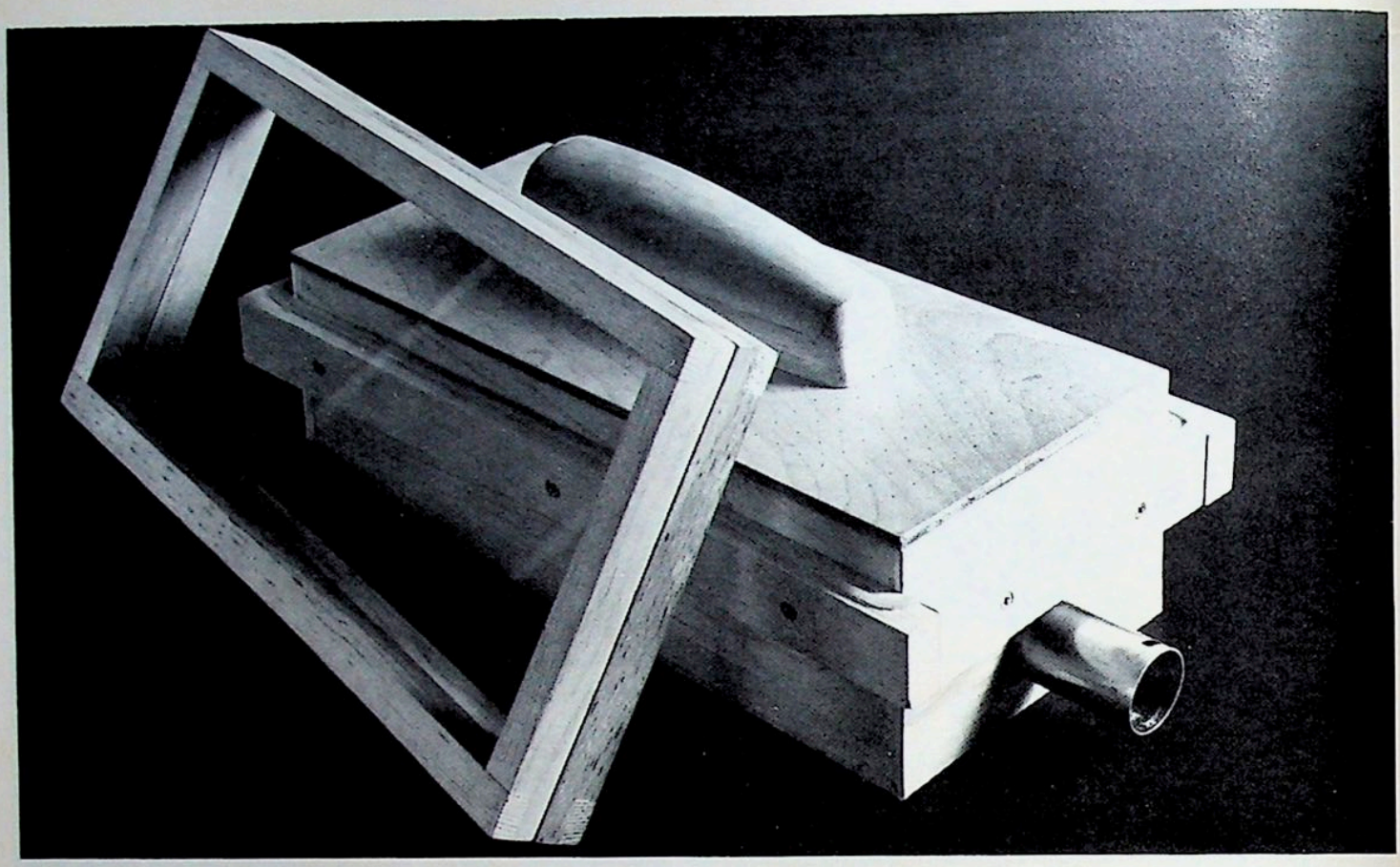


PHOTO BY THORNEY LEIBERMAN

MAKE YOUR OWN VACUUM FORMING TABLE

By RON WILLIAMS . . . A tool with unlimited possibilities for the scratch builder. Originally published in *Model Builder* in 1976 for making molded airplane parts, it continues to be a popular project for modelers of all interests.

One has but to read a few how-to articles on scale (or semi-scale) model boat or ship building to realize how often the question of small, multiple parts comes up. What to make them of . . . a thin, light plastic shape; but how to get it? Articles often mentioned "vacu-forming" the part. The Mattel Toy Company manufactured a "vacu-form" toy some years ago which has become a valued tool for many free-flight scale modelers (see Bill Hannan's column in the December 1975 issue of *Model Builder*). This toy had a small hot plate next to a vacuum chamber with a frame that hinged between the two. Small sheets of plastic held in the frame could be heated on the hot plate, flipped over to the vacuum table and pulled and formed over a small object by a hand-pumped vacuum. It was quite well designed and worked very efficiently. For builders of larger models, however, the Mattel unit had limited capabilities due to its small table size (approximately 3x5 inches). Larger parts require more "formidable" equipment. There is also the growing problem of finding Mattel units in working condition. Recently, Hobby Stuff Inc. (see ad in this issue) has come out with 4x4-inch and 4x8-inch units, less heater and vacuum device.

We will explore the process of vacuum-forming at home with the vacuum table described here. Look the drawings over to see what's what. Sig Manufacturing Co., Inc., Montezuma, Iowa 50171 *(that's the complete address. There are no streets. Heh, heh. wcn)* mail orders 8-1/2x17 sheets of heat formable plastic (styrene, I think). These dimensions seemed reasonable for the development of a useful unit. Smaller sheets of plastic can be handled by bringing them up to the large size with the addition of heavy bond paper taped to the small sheet.

I decided to start with our family vacuum cleaner. It is a G.E. tank type of unknown vintage. I have seen similar machines for $30 in local repair shops, second hand, of course. Your local repair shop should also have an adapter tube (Fig. No. 1) which, though not entirely necessary, will facilitate the attachment of the cleaner hose to the vacuum table.

The vacuum table was made with scraps of birch plywood and masonite found in the cabinet shop's throwaways. Some straight clear pine is also required. The box sides were made with 3/4-inch birch ply, the top with 1/4-inch birch ply, the bottom with 1/4-inch masonite (tempered) and the frame members with 3/4-inch clear pine ripped to 7/8-inch wide. Titebond glue was used, and the frame supports attached with 10 No. 10 flat-head sheet metal screws, 1-1/2 inches long. Some 50 thumbtacks are required (they hold the plastic film in place in the film frame). I used 1/8 O.D. surgical tubing (about 54-inches long) as a vacuum seal between the film frame and the support frame.

Tools required are a few 1/32 drills, a drill the size of the tack shafts, and one half-again as large. It's nice to have more than one of the 1/32 drills, as they are likely to break what with all the holes to be drilled. A high-speed drill like the Dremel Tool, is a great timesaver; a pin-vise is suggested for masochists. Gluing is facilitated with

an assortment of clamps, but if they are not available, the joints can be screwed as well as glued. Don't leave the glue out, it acts as a vacuum seal.

Begin construction by cutting the wood to size. Lay out the hole pattern on the table top (plywood or masonite) and drill the holes. My table top had 578 holes; the Dremel Tool enables me to finish the drilling in 30 to 35 minutes. I broke one drill in the process. Sand the top very carefully after drilling, smooth to 600 paper, and clear all the holes. Glue the outside frame of the box together, making sure the top and bottom surfaces of the frame are flush (even) as possible. Glue the top and bottom onto the frame, pressing them to the frame so that the joints will be as airtight as possible. If you haven't yet drilled the hole in the end of the box for the vacuum cleaner adapter, do it now. The hole should be such that the adapter can be expoxied, or Hot Stuffed, into place, firmly and tightly. A hole which is a snug fit for the tube on the vacuum cleaner hose can be substituted for an adapter tube, tape being used to seal it.

It is essential that the film contact the vacuum table top when its frame is pressed upon it. Squash the surgical tube between two pieces of wood and measure the thickness when pressed firmly by hand (lean on it). Add this dimension to the 7/8 dimension of the pine frame material; the resultant dimension is the measurement from the vacuum table top to the top surface of the support frame. Position the support frame pieces, drill and screw them to the box. Loosen the screws, glue generously, then re-screw. Use Hot Stuff to glue the surgical tube to the support frame. Locate the tubing at the center of the support frame so that the tubing can spread freely when the film frame is pressed upon it. Spot-glue the tubing at first to locate it, glue the splice, and then glue the rest of it in place.

Make the film frames from the rest of the 3/4 x 7/8 pine pieces. The frames should be able to be slipped snugly, easily . . . *easily* . . . down over the table and onto the support frame. Keep the faces of the frame as flush (in a single plane) as possible by matching the pieces before gluing, and by planing and sanding carefully. Mark the two surfaces which match best when the frames are held together, and on one of them, mark off the positions for the tacks.

Cut the heads from 50 tacks. Drill holes which will leave about an 1/8 inch of the cut tack shaft protruding from the surface of the frame. A piece of masking tape wrapped around the drill can indicate the depth to which the hole is drilled. Rub some balsa dust, micro-balloons, or baking soda into the holes, insert the tack shafts, point up, and add Hot Stuff. It occurred to me that a more satisfactory method might be to drill holes the size of the tack *heads* and drop the entire tack into the hole, point up, and back fill the holes with epoxy or wood filler.

When the tack frame is ready, put it against the second film frame and press them together so the tacks mark the second frame. Drill holes slightly deeper and a half-size larger than the tack shafts, at each of the marks in the

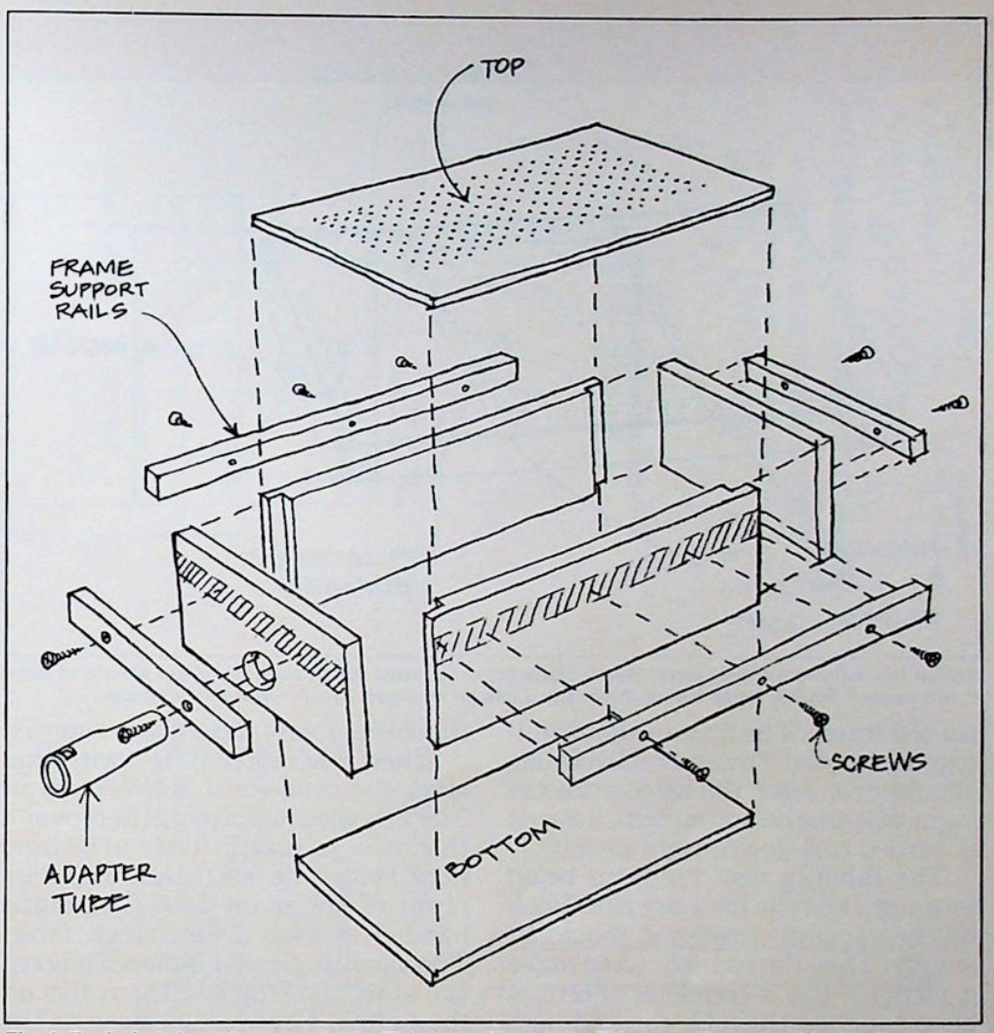
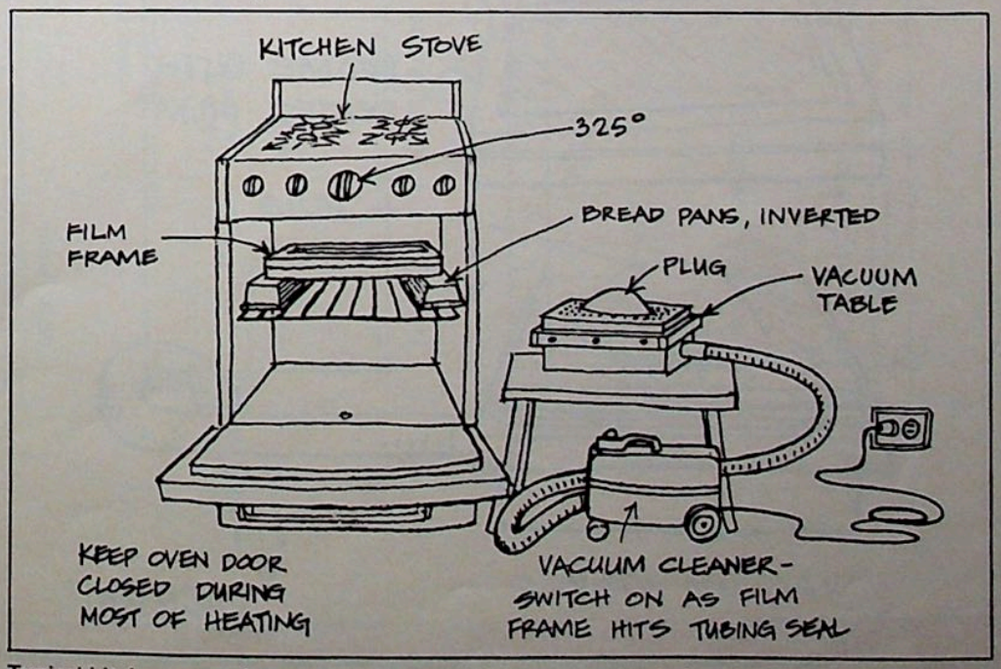
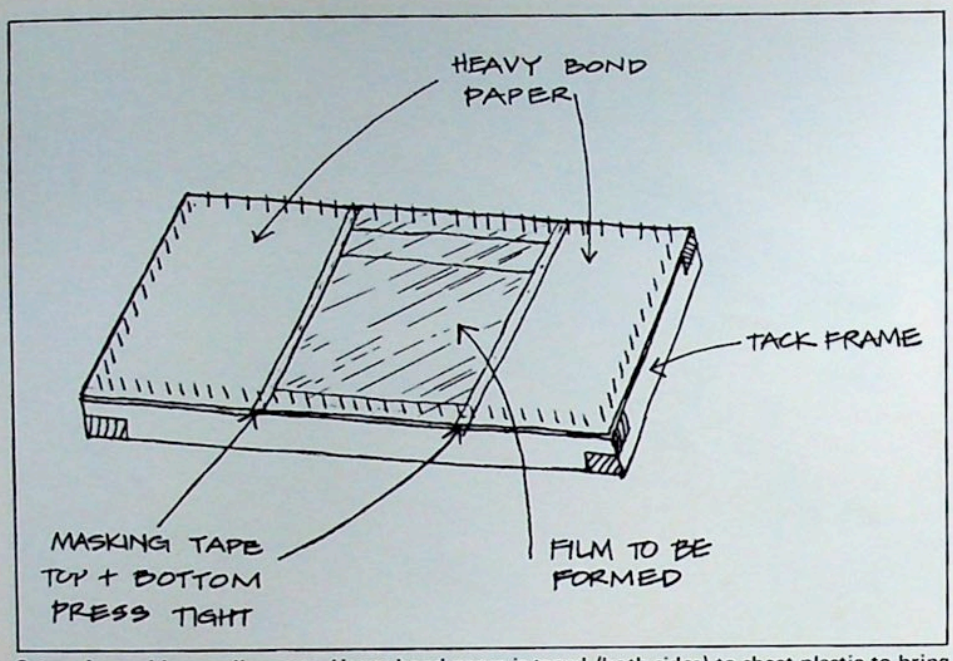


Fig. 1. Exploded view of vacuum table. This looks like what will happen if you don't fasten the parts together and then hook up to the wrong end of the vacuum cleaner!



Typical kitchen set-up for vacuum forming. A foot-operated switch on vacuum cleaner comes in handy during operation!



Set-up for making smaller parts. Heavy bond paper is taped (both sides) to sheet plastic to bring it out to tack frame. Basic frame dimensions can be changed to suit your expectations.

second frame. The frames should fall together easily. The assembled frame should drop over the table onto the support frame no matter which way it is turned (up, down, right or left).

The table is now ready to begin forming. It's time for a dry run. Hook up the vacuum cleaner; it should fit snugly. Tape the connection to make it airtight. Lay a couple of sheets of bond paper on the table top and turn on the cleaner. The paper should be pulled tight to the table. Seal any joints of doubtful air-tightness with masking tape, rubbing it down tightly. Fill the corner joints of the frame support.

When you're ready to form film, start the oven (heat source). About 325°F. is good for forming the type and thickness of plastic likely to be used here. I place the box to the immediate right of the oven door (I'm right handed) on a low (24-inch high) table. The vacuum cleaner is placed where I can start and stop it with my foot on the switch. The oven shelf goes in the middle of the oven and two bread loaf pans are positioned upside down at either side of the shelf to support the film frame.

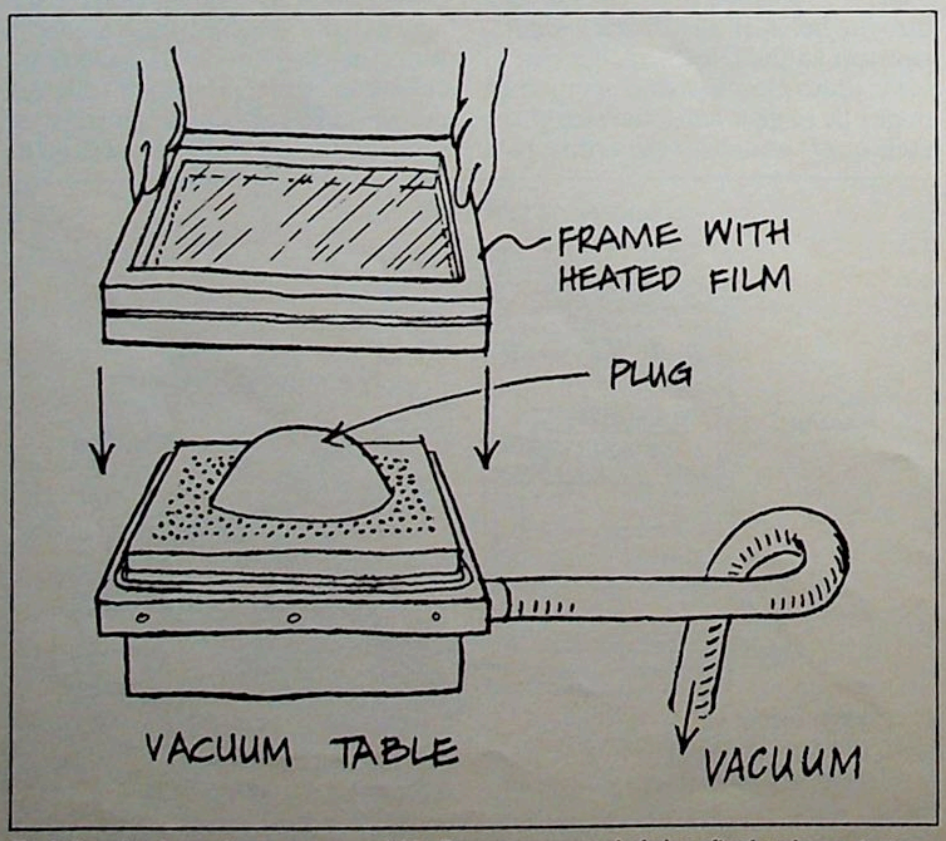


Fig. 2. Pressing frame down on vacuum table. For proper removal of plug after forming part, plug sides must be straight or taper in toward top. Undercuts will stick in finished part.

Stretch the film in the frame by placing it on the side with the holes and pressing it firmly against the tack frame until the tacks are through the film and the two frames fit tightly together. This can take quite a bit of pushing with .040 film. With the frames together snugly, run a piece of 1/2-inch, or wider, masking tape around the frame to seal it airtight.

Position the plug to be formed on the vacuum table after warming it slightly in the oven (not too hot to touch and hold).

Put the film frame in the oven and while it's heating, test the vacuum cleaner, on and off.

Open the oven door after about 30 seconds and take a peek at the film. It will buckle and sag, steam, and pull tight again. When acetate steams, or "smokes," it's about ready to form. I find that about 50 seconds at 325°F. with the oven door open and closed a few times, works fine with .030 acetate. Experimenting with other film types and thicknesses will improve technique. Remove the frame from the oven and swiftly press it down over the form and table onto the support frame. As the film frame is pressed against the surgical tube seal, kick on the vacuum cleaner. The film will be sucked down upon the table top, shwop, and voila, the finished part! Wait 20 or 30 seconds for things to cool and, after turning off the vacuum, lift the frame and remove the plug from the plastic. The plastic can now be removed from the frame and cut to fit the model.

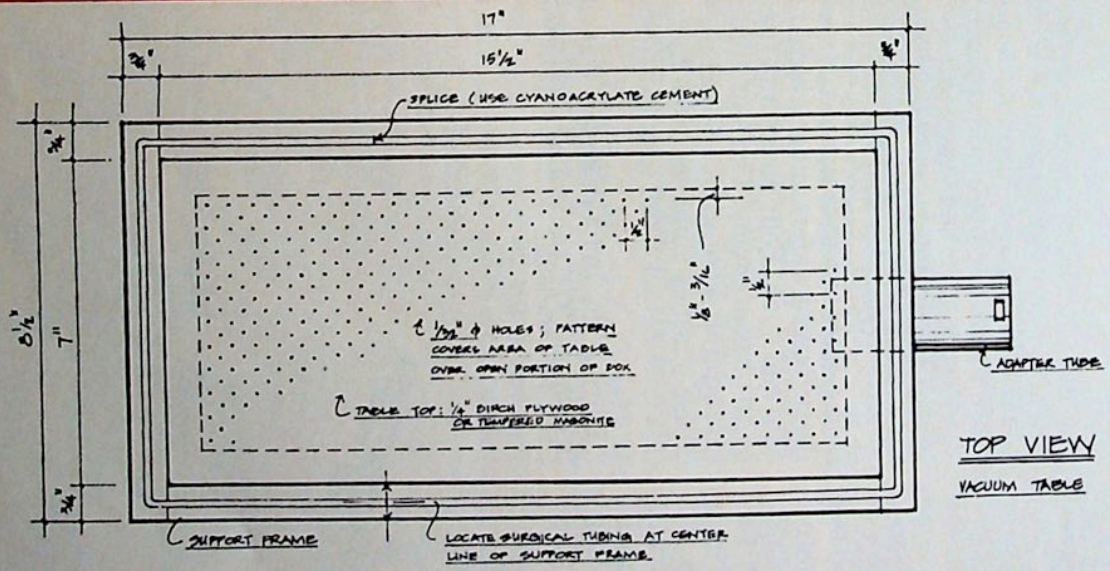
Easy, eh? Not really so. The most time-consuming and fussy part of each forming job is the preparation of the core, form, or plug used to make the final plastic part. The plug should be wider at the bottom than the top, having no undercuts which make the film difficult to remove from the plug (Fig. 2). It should be very flat and smooth on the bottom. The plug should be higher than required for the finished object so the formed film can be trimmed exactly to fit the model.

Plugs can be made of balsa, pine or bass wood. The finish of the final plastic piece will only be as good as the finish on the plug. The wooden plug can be finished with Hobbypoxy formula 2 glue, sanded to a 600 paper smoothness, or smoother with steel wool. Do not use wax on the plug.

Another type of plug can be made using plaster. This is done by pouring model casting plaster into a plastic form made from the original wooden plug. The plastic form should be well

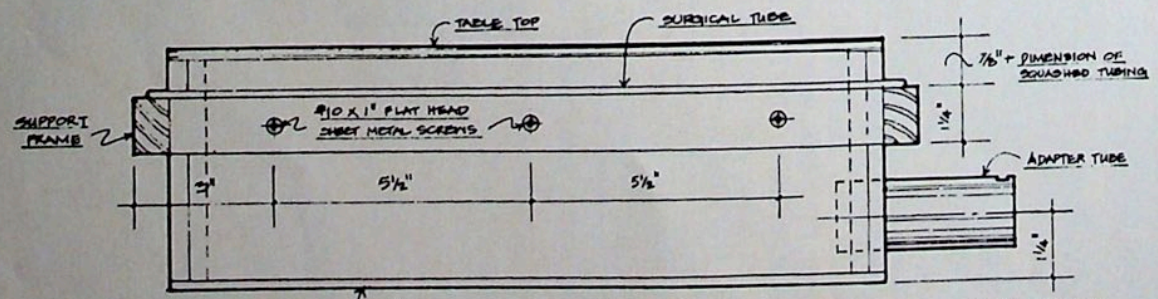
Continued on page 58

FULL SIZE PLANS AVAILABLE — SEE PAGE 78



TOP VIEW

VACUUM TABLE

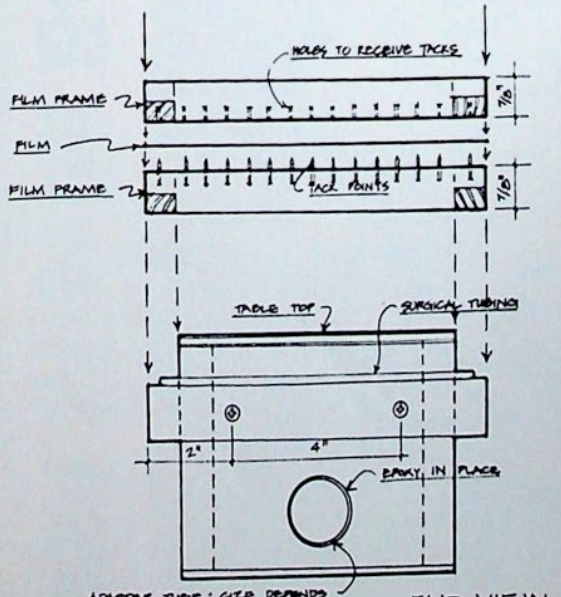


SIDE VIEW

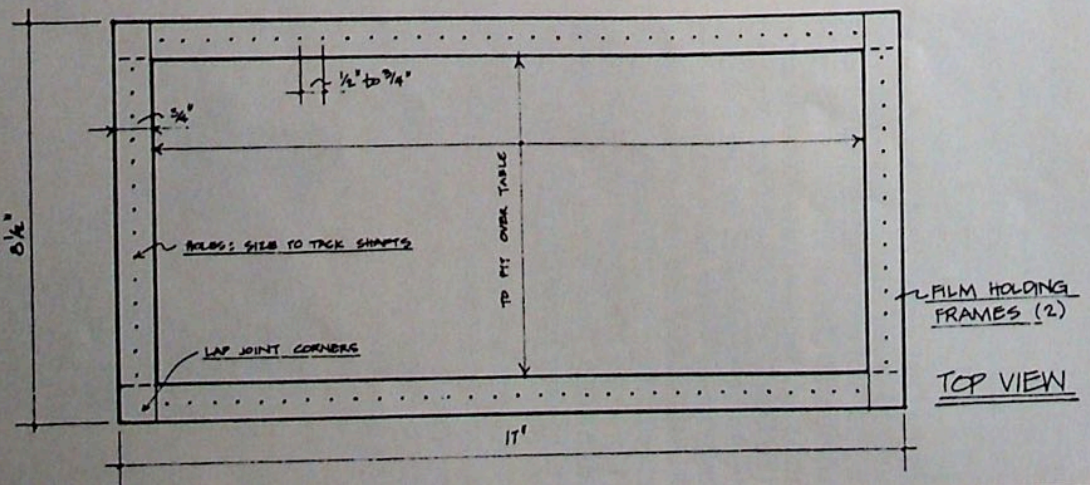
FRAMES: CLEAR PINE

BOX: BIRCH (CABINET GRADE) PLYWOOD

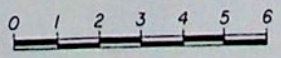
ENTIRE UNIT CAN BE BUILT TO A LARGER OR SMALLER SIZE



END VIEW

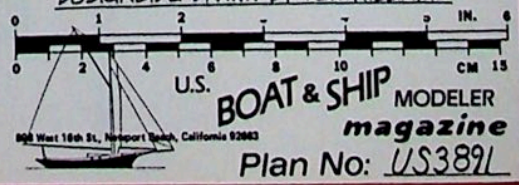


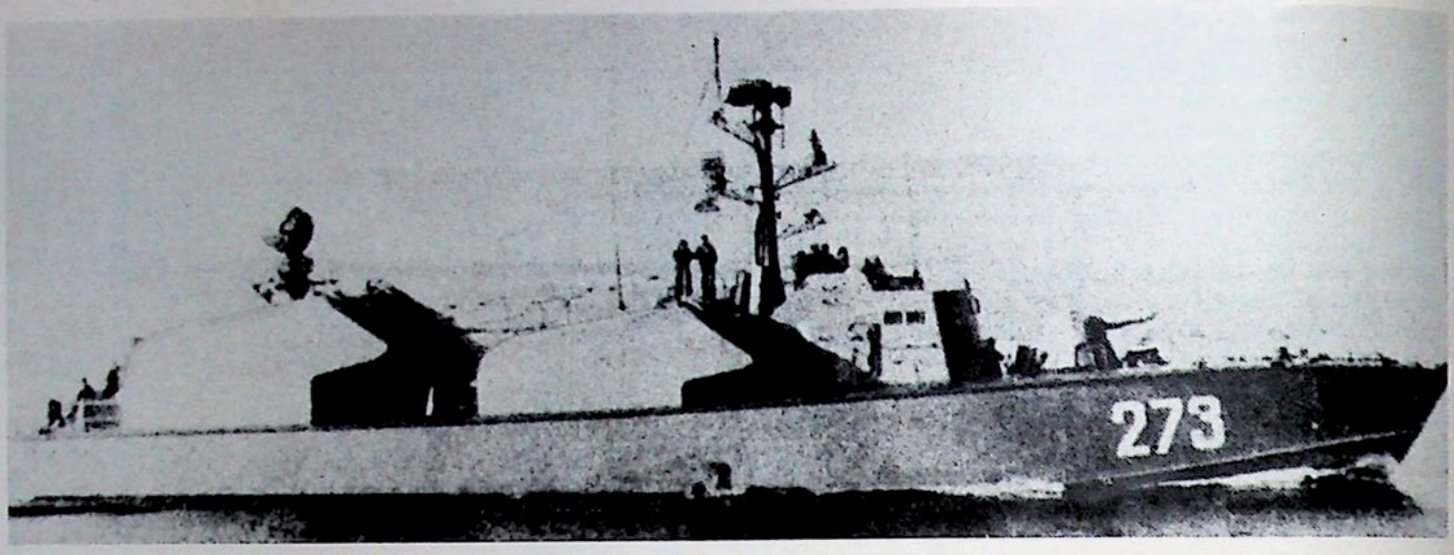
TOP VIEW



VACUUM FORMING TABLE

DESIGNED & DRAWN BY RON WILLIAMS





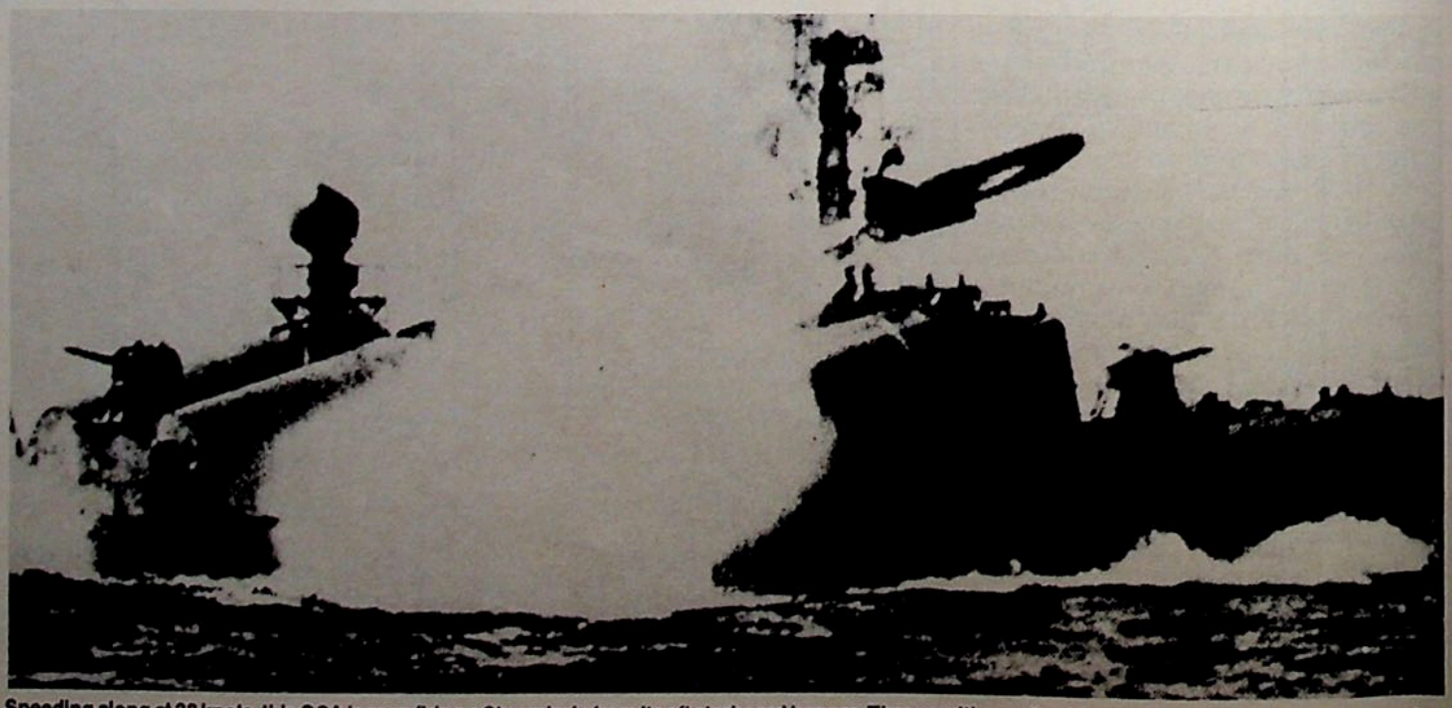
Russian OSA Missile Boats

By WALT MUSCIANO . . . The following is a history of Russia's OSA Fast Attack Craft-Missile, and is the first part of a detailed construction article of this little-known weapon system. If you think that cruise missiles are something new, you haven't been paying attention to your newspaper for the last 20 years!

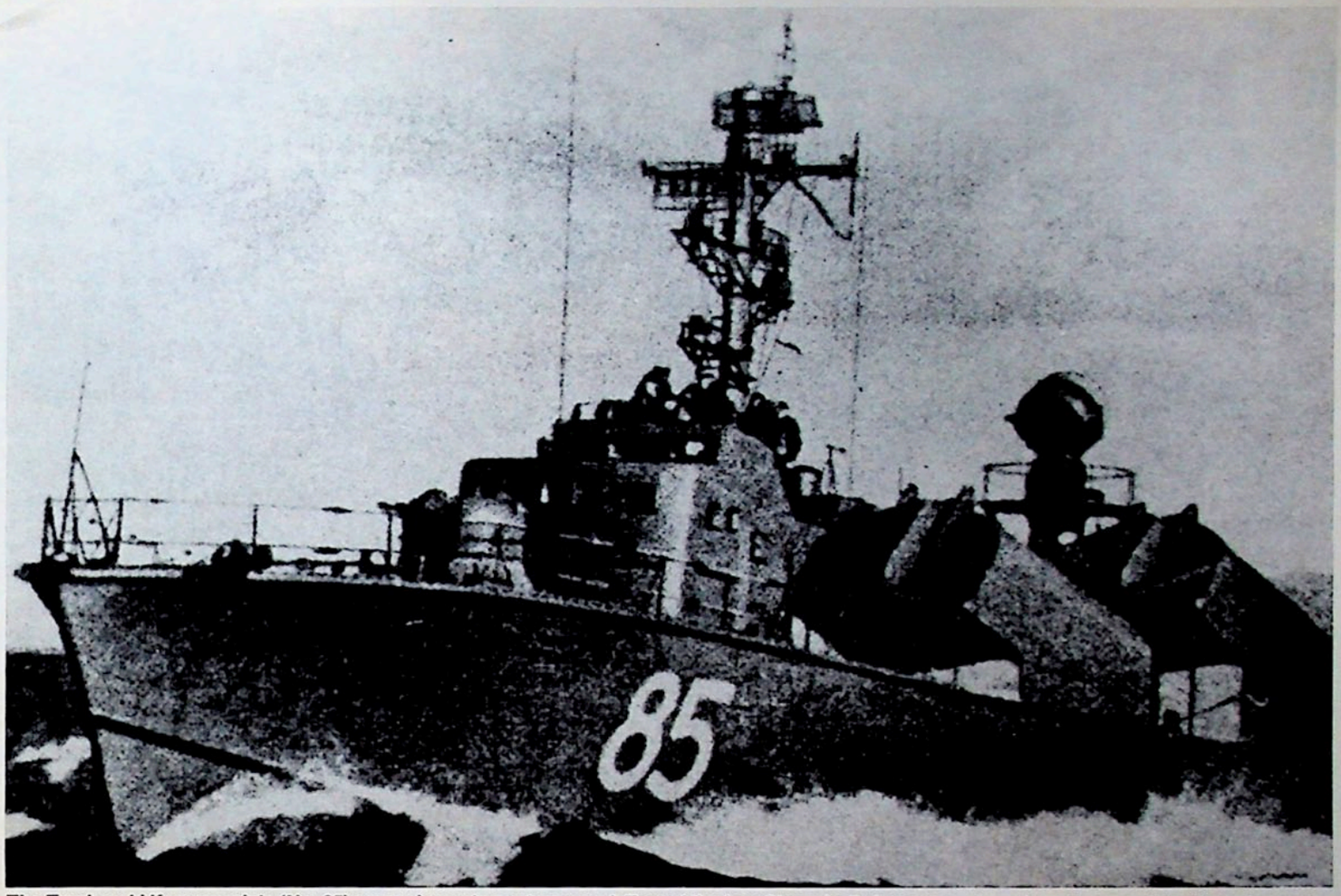
Cruise missiles have been the subject of heated discussions by Western military strategists and politicians in recent years, and yet the Soviet Union has had cruise missile firing Fast Patrol Boats in service for over 20 years! At the latest count, the USSR had constructed about 170 of these craft, 120 of which are the four-missile Osa class boats. Not only have the Osa (Fast Attack Craft-Missile) boats been operated by the Soviets, but many have been exported to Russia's allies and military hardware clients: Algeria (3); Bulgaria (3); China (17); Cuba (2); Egypt (12); East Germany (12); India (8); Iraq (5); Poland (12); Romania (5); Syria (5); and Yugoslavia (10). Battle proven in the hands of Soviet clients, these missile craft have come to appear very potent in the eyes of Western observers.

The strategy and tactics of the principal navies of the world were thrown into chaos by a military action during the 1967 Arab-Israeli war. On October 21, 1967, the Israeli 2,500-ton destroyer, the *Elath,* was on patrol off the Egyptian coast. This British-built vessel *(ex-HMS Zealous)* was a formidable warship with four 4.5-inch guns, eight 21-inch torpedo tubes, and six 40-millimeter AA guns. The *Elath* was well able to confront any ship in the Egyptian navy. Suddenly, a miniature aircraft approached at very low altitude and high speed. So great was the surprise, that before the *Elath* could take defensive action, the aircraft struck the mast and exploded. Before the smoke had cleared, another miniature aircraft appeared, striking the hull with an enormous explosion. A third aircraft struck the sinking ship, while a fourth companion struck the turbulent waters under which the ship had sunk. Four direct hits fired by an unseen enemy! The four miniature aircraft were, in fact, Soviet Styx cruise missiles launched from Egyptian Fast Attack Craft about 15 miles away.

During the India-Pakistan war of December 1971, the Indian Osa boats



Speeding along at 38 knots, this OSA is seen firing a Styx missle from its aft starboard hangar. Three multi-row, liquid-cooled, diesel radial engines, each producing 4,800 hp, give the OSA its top speed and 25-knot cruising range of 800 miles.

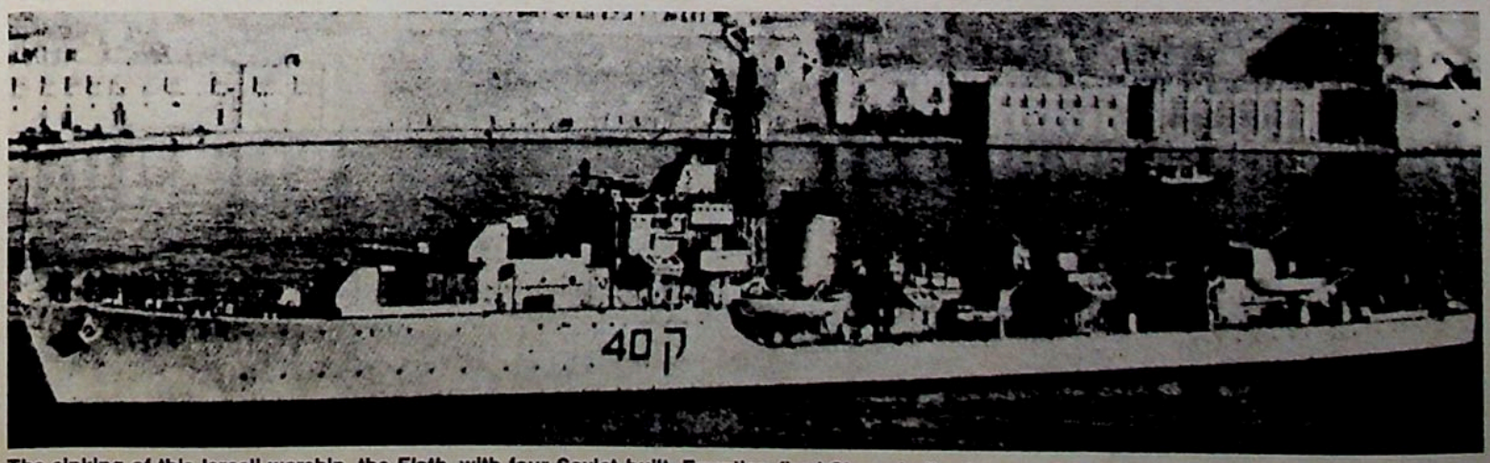


The Tambovski Komsomolets (No. 85) roars along at near top speed. Two of the four Styx missile hangars on board can be seen. The all steel vessels weigh 200 tons and require an operating crew of 25.

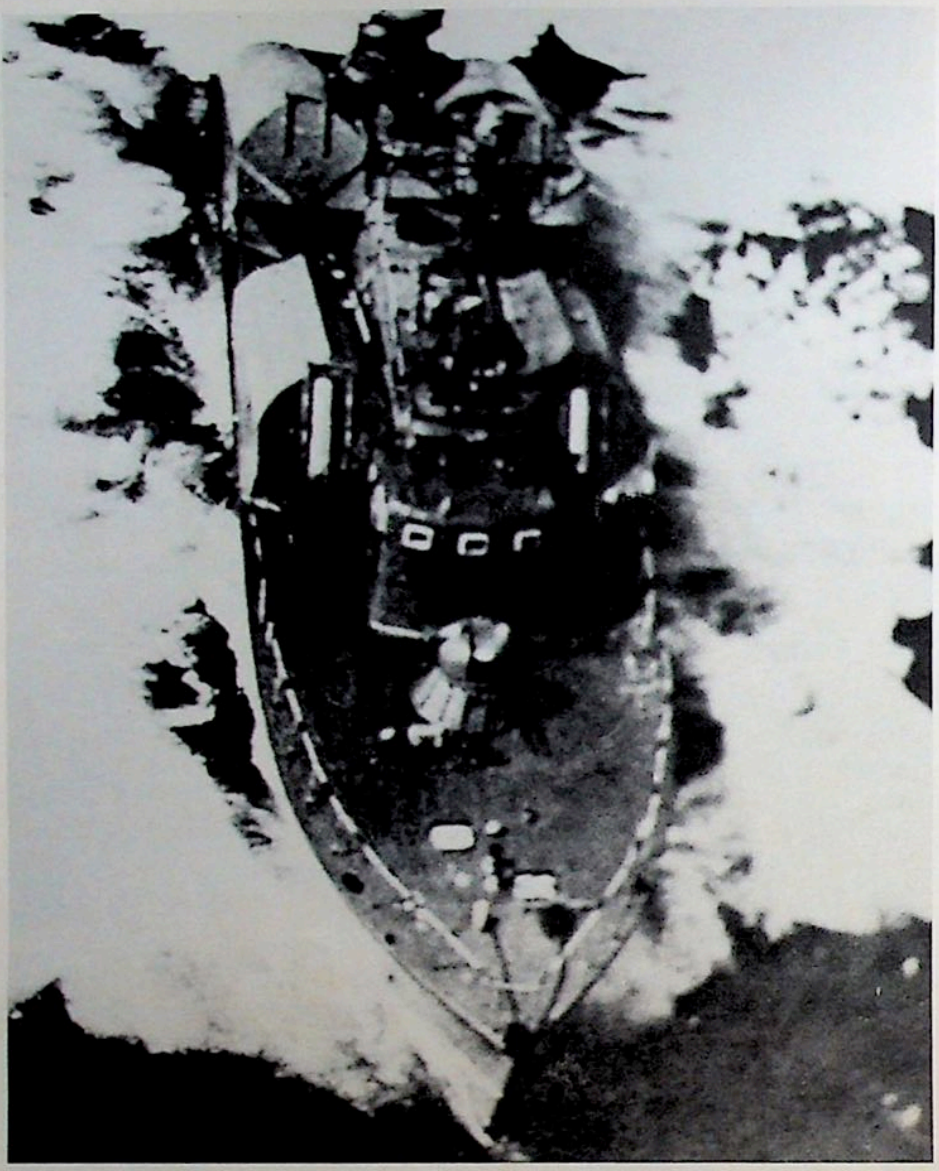
proved very successful with Styx missiles in nocturnal operations against merchant ships which were trying to supply Pakistan. The Osa helped considerably in ensuring an Indian victory.

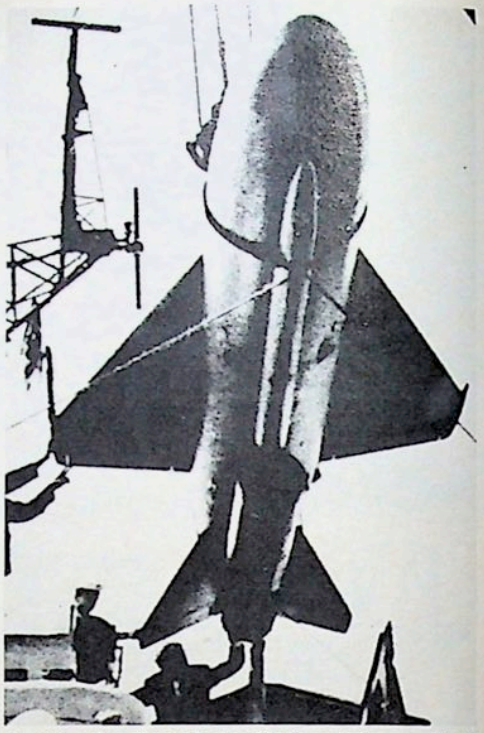
The Osa Fast Attack Craft-Missile proved a revolution in naval tactics and shipbuilding. These 200-ton steel craft are powered by three unusual 4,800 hp M-504 multi-row liquid-cooled radial diesel engines; each driving its own propeller. The top speed is 38 knots and range is 800 miles at 25 knots. A crew of 25 can operate the craft as well as handle missile launching.

The Osa boats are usually towed to and from patrol and combat areas in order to conserve wear on their powerful engines, and because of their limited range. They are often refueled at sea, but generally are confined to coastal operations where they could prove lethal to any invading force or convoy. Four Styx cruise missiles are carried on deck in combination hanger/launchers which are loaded at dockside, or at sea from a larger supply ship. The biggest threat to these craft is air attack, so, in addition to their speed and maneuverability, the Osa boats depend upon four 30 mm rapid-fire AA guns for aerial defense. The guns are fitted in two twin mounts . . . one set forward and one set aft . . . which are aimed and fired by a very sophisticated fire control director. Because these craft were developed expressly to launch the surface-to-surface Styx missile, there is not much space on board for heavy defensive armament. The entire design is devoted to the storage, launching, and guidance of the Styx missile.



The sinking of this Israeli warship, the *Elath*, with four Soviet-built, Egyptian-fired Styx missiles from an OSA Fast Attack Craft really put Western strategists into a state of deep concern back in the 1967 Six-Day War. Crew of the *Elath* never saw the enemy vessel!





Another loading photo. Note solid propellant rocket booster and guide rails under booster.

As with the patrol boats of most navies, the Osa craft bear numbers instead of names; however, the Soviets often give these boats names which do not appear on the craft. Some known names for Osa are: Brestaskii Komsomolets; Tambovskii Komsomolets (No. 85); and Kirovskii Komsomolets.

Styx is the NATO code name assigned to the Soviet surface-to-surface SSN-2 cruise missile. As any model builder knows, a cruise missile is nothing more than a pilotless aircraft, and with a wingspan of only 106 inches, the Styx is little more than a heavy model airplane.

Of course, the idea of a flying bomb is not new, having been conceived, and prototypes built, in the post-World War One years. The German gyroscopically-controlled V-1 "Buzz Bomb" cruise missile of World War Two was the first military application of the idea; however, the absence of a substantial guidance system gave the V-1 little more than nuisance value.

Propelled by an internal solid-fuel rocket engine, plus an external solid-fuel booster rocket under the belly, the Styx has a range of up to 23 miles. The Styx is radar guided during the cruise phase of the flight. The radar in the Styx nose cone sends its scan to sophisticated computers aboard the Osa. These analyze the information and decide upon the action to be taken.

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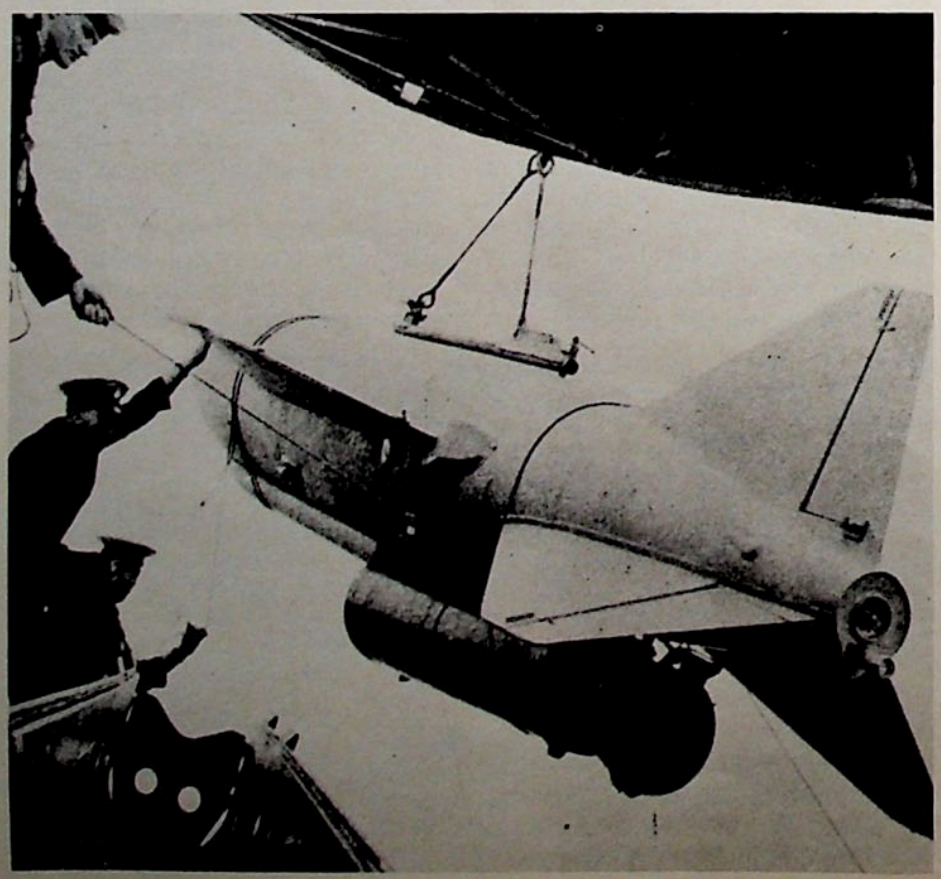

(Above) This aerial view of the Fast Attack Craft-Missile (OSA) shows its business-like layout. (Below) Soviet crew load deadly Styx missile into one of four launcher/hangars aboard an OSA.

WE'RE BREAKING NE

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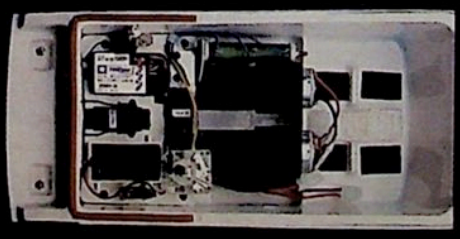
BE A MODEL CITIZEN

Introducing the VILLAIN IV™. This TRAXXAS™ model incorporates the design and engineering that has already proven itself on the full-scale CHAPARRAL™ VILLAIN IV. Everything, from the stability of the "deep V" off-shore racing hull to the sleek graceful styling, has been fanatically reproduced in order to furnish the most accurate boating experience. That's something no flimsy toy boat could ever accomplish.

DUALS TWINS DUALS



This beautiful hull couldn't carry the VILLAIN IV name without powerful performance. Dual motors supply twice the thrust. Twin outdrives double the cornering excitement. Dual battery packs, wired in parallel, add twice the run time.

TWEAKER'S DELIGHT

The 2:1 gear ratio is adjustable higher or lower for perfect matching of motor power and prop size. Ample room has been provided for larger aftermarket screw-on props. The trim angle can also be altered to get the performance and look "just right."

SPECIFICATIONS	
HULL	"Deep V" Offshore racing
WEIGHT	3.5 lbs. (w/o batteries)
LENGTH	31" Overall
BEAM	8.25" Overall
DRAFT	4.5"
DEAD RISE ANGLE	22 Degrees
MOTORS	Twin RS-540S With Aluminum Heat Sinks
DRIVE SYSTEM	Adjustable 2:1 gear Steerable Outdrives Counter-rotating Props
OILING SYSTEM	Built-in
PROPELLERS	Surface Piercing
TRIM ANGLE	Adjustable
SPEED CONTROL	Model 1501 - 4 Step FWD/REV Mech. Model 1502 - FWD/REV Electronics
RADIO	2-CH w/Servo Reverse
BATTERIES	(1) or (2) 6-Cell
STAND	Mahogany (included)
APPROX. RUN TIME	8-12 Min. (2) 6-Cell 4-6 Min. (1) 6-Cell

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Main subject of this issue's column, the columnists "Executone" unlimited project with driver/son Paul Dunlap, and Dave Frank. It's been having its ups and downs during shakedown runs, but is beginning to click.

R/C POWER BOATS

180

By JERRY DUNLAP

"It was the best of times, it was the worst of times." These well known lines from a literature classic would seem to capture the essence of what has been happening in my model boating endeavors for 1989. Most of my model boating time and energy since the beginning of this year has been consumed by two boating projects: an R/C Unlimited and a fast electric outboard tunnel. Since I haven't built or reviewed any other model boats in the past six months, the main topic of this issue's column will focus on "The Tale of Two Boats."

Actually, the R/C Unlimited project was given some amount of print in the 1989 Spring issue of *USB&SM*. That article was written while the boat was still in the construction phase in the David Frank Boat Shop. Before progressing any farther in this tale, I need to give special credit and thanks to fellow contributing editor and good friend, David Frank, for his skills and efforts in assisting in both projects. David's assistance and support facilitated the completion of both projects.

The R/C Unlimited boat has proven to be a very challenging and frustrating undertaking. This is the "worst of times" mentioned at the beginning of the article. The model is a 1/8-scale

Two versions of the same hull; the author's 1982 "Executone" and Harry Anderson's 1985 "Miss Rock/KISW." Old hydros never die, they just get a new paint job.

Jerry Dunlap's "Executone" at speed. Son Paul handles the driving chores. That's Paul in the . . . no, dummy, it's the model!

version of the 1982 "Executone Telephones." The full size boat was built in 1982 by Ed Karelsen in Seattle, Washington, and was raced originally as the "Oh Boy! Oberto." As can be seen from the photos, David did a beautiful job of finishing the model. Using skills developed building his David Frank Sport 40s, David also did a masterful job of installing the engine, radio, and fuel systems.

An innovative feature of this particular model is the extreme forward placement of the motor. The idea was to use the motor's weight to assist in balancing the hull without adding lead. The forward motor location necessitated locating the radio and fuel systems in the hull. Access to the radio and fuel systems is through hatches in the bottom of the tunnel floor. There's good news and bad news about this method of installing radio and fuel systems. The good news is the systems are out of the way, leaving an uncluttered center section with only the motor and tuned pipe. The bad news is that special attention must be paid to properly sealing the hatches because they are constantly exposed to the water. Also, should there be a need to service either system, it takes considerable time to remove all the bolts securing the hatch.

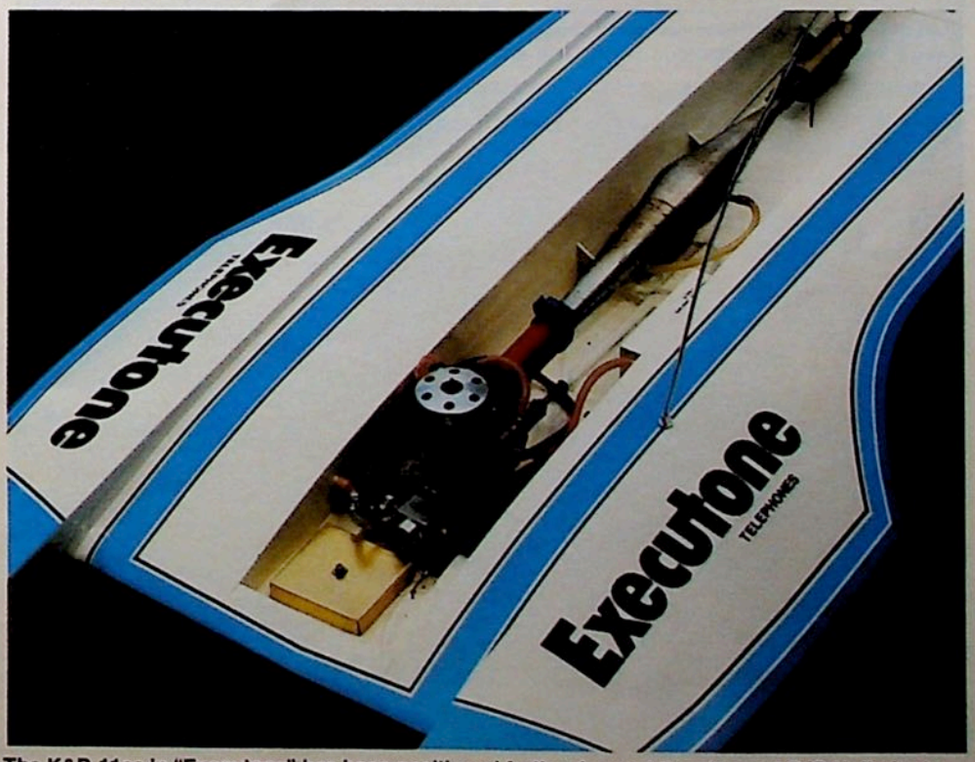
The boat was ready for initial testing in mid-March and right from the first "heave-ho" it was readily apparent the hull was going to work just fine. The boat cornered very well and displayed good speed down the straightaways. That first day's running gave no indication of the problems that would surface once we began to get serious about entering the boat in competition.

We missed the first District 8 R/C Unlimited race in mid-April because we were unable "to get it all together." With the "Executone Telephones" finally race ready, my son, Paul, passed the driver's qualification test in late April. The driver's qualification test consisted of an oral test dealing with basic R/C Unlimited racing rules and a demonstration of driving ability. During the demonstration runs, the motor quit a couple of times. When the boat was retrieved and the motor checked, the glow plugs were completely destroyed. In a couple of instances, the glow plug post was blown out of the plug. Now, that's a sure sign something isn't right!

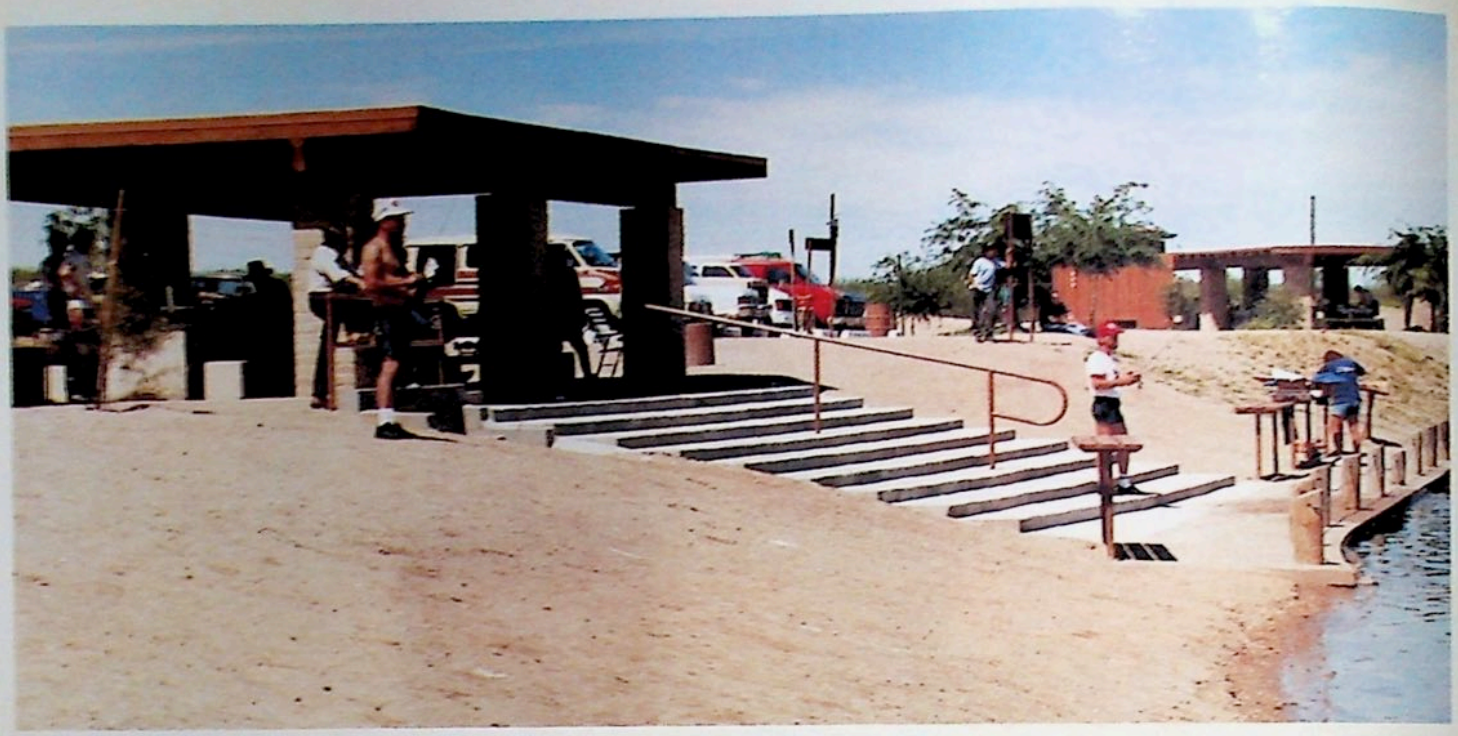
After returning from the qualification outing, the motor was completely torn down. I began making phone calls to many of my model boating friends who race the R/C Unlimited Class or have experience with 11cc motors. Head clearance was increased, and tuned pipe lengths were suggested. Water cooling techniques were discussed.

When the R/C Unlimited contingent headed for the second race of the season at The Dalles, Oregon, the first weekend in May, David and I went to Capitol Lake in Olympia to do more testing. It seemed like the same story. The boat worked great. But the motor continued killing glow plugs whenever we tried to lean it down and develop some power. More phone calls were made. The motor was taken to a knowledgeable friend who increased the head clearance and made some adjustments to the carb. I invested in a dozen glow plugs which were supposed to be suited for 11cc motors.

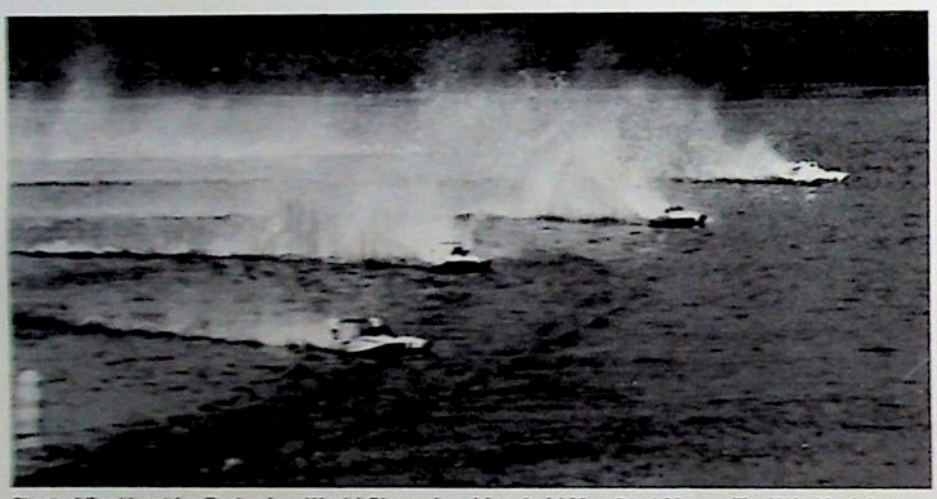
Hoping our motor problems were cured, Paul and I drove to the third R/C Unlimited race of the season held



The K&B 11cc in "Executone" has been positioned further forward than in most R/C Unlimiteds. Radio and fuel systems located in hull. Uses Prather pipe and muffler.



The covered pits and the drivers' area at the Tucson Model Boat Pond, Tucson, Arizona. An excellent facility provided by the city.



Start of final heat for Budweiser World Championships, held May 21 at Marysville, WA. Models are (l to r): Tosti Asti, Competition Specialties, American Speedy Printing, and Stuphen Spirit.

Kart Morse, commodore of Tucson Model Boat Club, rope starting one of two K&B 11cc engines in his 54-inch Dumas Scarab. Very impressive boat when running.

at Twin Lakes, near Marysville, Washington. A test run prior to the start of racing showed the motor seemed to be working satisfactorily. I thought we were ready.

In our first actual R/C Unlimited racing heat, Paul brought the "Executone Telephones" across the starting line in third position. He took the lead in the second corner of the lead lap when the boats in front of him drove wide. Paul continued leading, but in the third lap the boat began losing speed. In the final turn of the last lap, the boat came to a stop while still in the lead. We were really disappointed. The boat was retrieved and a blown glow plug was the culprit. "Too lean" was the probable cause and the carb was reset.

In our second heat, Paul was given a one lap penalty for cutting into the infield before completing a full lap during the mill. Even with a lap penalty, he drove to a second place finish, lapping every boat except the leader. We had 300 points and our first finish in R/C Unlimited racing. But when I checked the glow plug after that run, it was basically ruined. The motor really didn't put out much power during that heat, so I elected to go with another head shim instead of readjusting the carb.

Luck of the draw placed Paul and the "Executone" in the third heat with Jim Auguston's national record holding R/C Unlimited, the "BOAT." Although Paul lead a field of three across the start, Jim used his superior boat speed to pass in the first turn. With a motor running down on power, Paul

managed to hold off the remaining boat to finish second and earn another 300 points.

Our 600 points were sufficient to qualify for the second consolation. The only problem was we would need to change frequencies. Earlier I mentioned the "bad news" associated with a radio system built into the bottom of tunnel floor. With the continuing of our motor problems, I just didn't feel like going through the process of changing frequencies. We left our first R/C Unlimited race knowing we had a good boat, a driver capable of racing with the best of them, and a motor problem still unsolved.

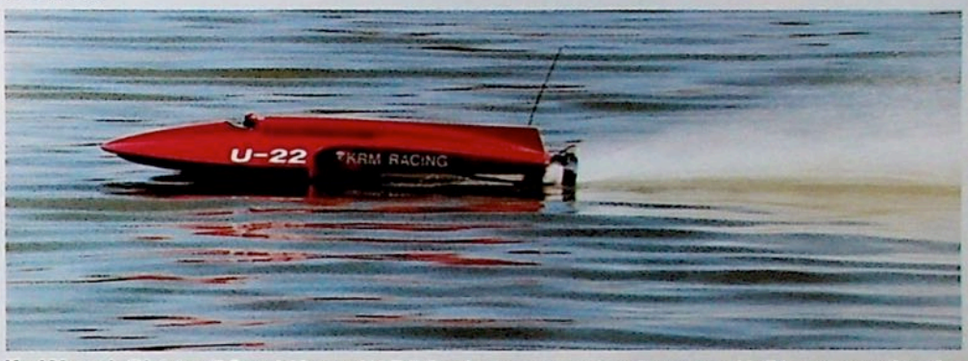
The following weekend, Memorial Day weekend, found us entering the "Executone" in the Sport 60 Class at the District 8 Double Points Race at the Kent Lagoon. The day prior to the race, the motor was given to Rod Geraghty to check over. Although best known for designing record holding tunnel hulls, Rod also has considerable knowledge about setting up motors. Rod returned the motor Sunday and helped us get a needle.

In the first heat, Paul brought the boat across the starting line in first place and led for two laps until a tuned pipe coupler blew and he shut it down in the inside of the course. A new coupler was installed and the boat prepared for the second heat. During the mill time of the second heat, the boat stopped. Seems like the battery pack in the boat was low and the servo sentry shut down the throttle. With no points in two heats and not wishing to tear into the radio system at the pond, the boat was packed away in the pickup.

Monday was Memorial Day, and Paul and I were back at the Kent Lagoon with a new battery pack and determination to get this boat working right. In talking with a few other guys at the pond, I found out another model boater was having problems blowing the seal around the glow plug stem. Roger Newton, the Godfather of R/C Unlimiteds, was testing his "Miss Budweiser" and let me try an OPS plug. It was necessary to readjust the needle-valve for this new plug. After a couple of needling runs, the motor really developed some power and the boat was really hauling.

A trip to the hobby shop provided a half dozen OPS Gold Plugs (appropriately named, these babies are not cheap!). A trip to Portland, Oregon for the Rose Cup, the first Sunday in June, provided the opportunity to see if the gremlins had been eliminated. After frying a glow plug during a morning practice, another head shim was added. Another practice run provided a "so-so" needle setting. But I figured it was best to just try to get the motor to run "so-so" than not at all. Another problem, the temperature was approaching the high 80s.

White 1988 "Stuphen Spirit" of Sam DeFilipps, Friday Harbor, WA. Leads 1989 Dist. 8 R/C unlimited championship point series after winning two of first four races. Don Mock's "Atlas Van Lines" on the inside.

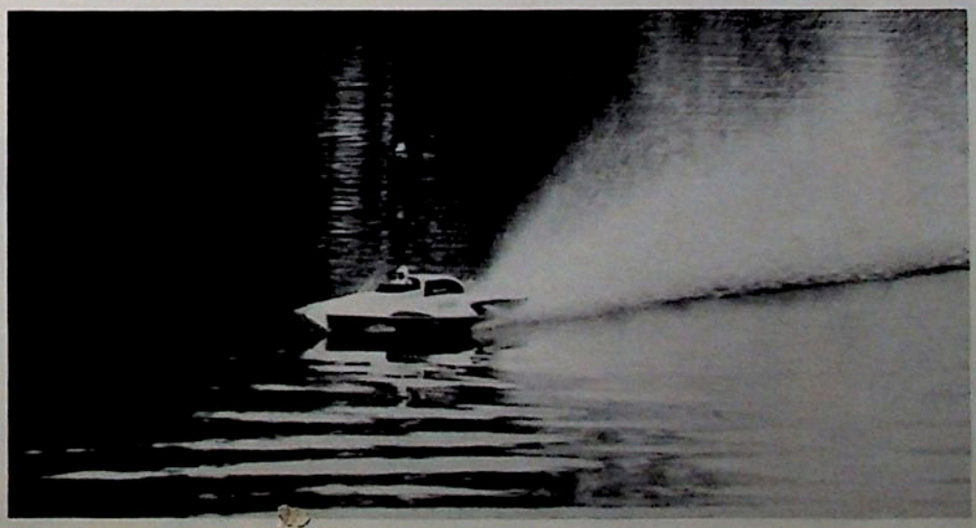


Karl Morse's Division II Sport 40 uses K&B 7.5cc for power, and really moves. Hull is a conventional cab-over design made from fiberglass.

In the first heat, Paul drove the "Executone" to his first heat win when all but one other boat failed to finish. Checking the plug after the heat win showed the coil had been "sucked out." The needle was "richened" and a new plug installed. In his second heat, the boat only managed to make a half lap in the mill before it quit. When we got the boat back, the plug was fine and it restarted immediately. In the third heat, the boat made it through the mill period and was running in second place, when it quit after a lap and a half. It was not a happy trip home from Portland.

More phone calls Sunday night after arriving home from Portland. With three weeks before the next R/C Unlimited race, it's time to find out what's causing the problems. As the article is being prepared, the motor is being rebuilt, a modification is being made to the fuel system, and the

Continued on page 52



Veteran model boater Ron Erickson's "American Speedy Printing" is another version of Executone. Ron has placed 2nd and 3rd at two of early 1989 Dist. 8 R/C unlimited events.

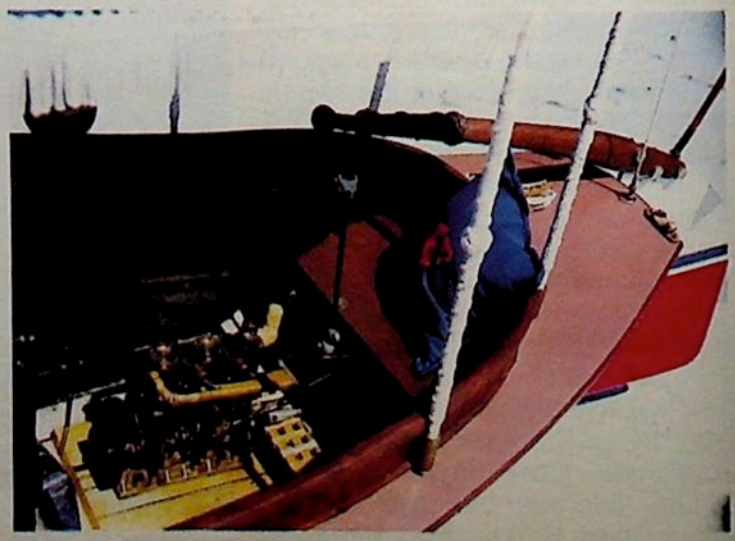
By FRED LEHMBERG . . . Quarter-scale model of a projected 16-foot steam powered bay cruiser, by our "Waterlines & Currents" columnist.

PUFF

To maintain fidelity, the model is also steam powered, but the choice of going electric is up to you.

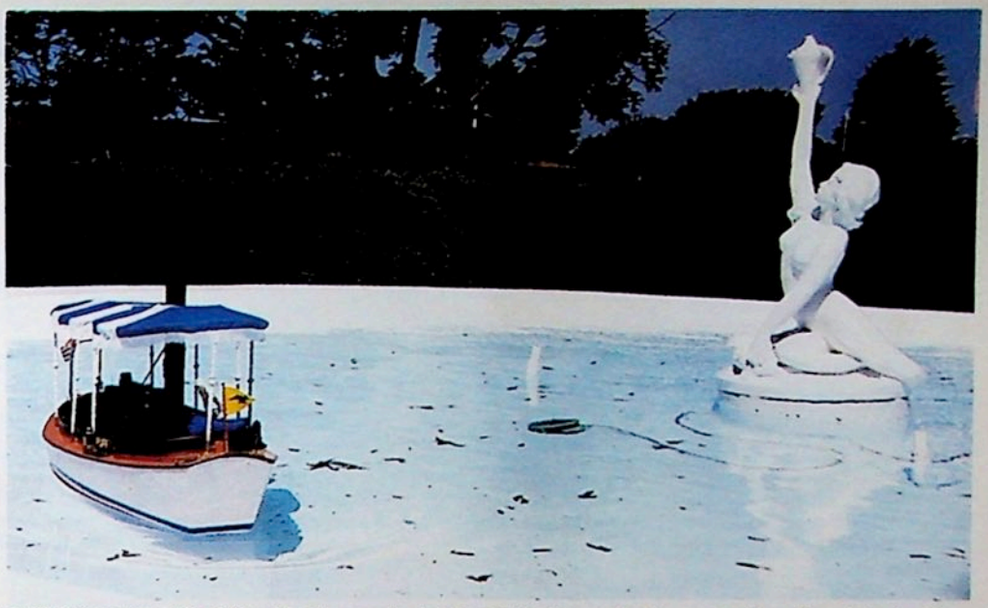
Many of the readers of *U.S. SHIP & BOAT MODELER* will recall the Summer 1988 issue which included the design of a little 16-foot steam launch, PUFF. In that and succeeding issues, this column, "Waterlines & Currents," promised the plans for a quarter-scale PUFF. Well, as the lady in Marblehead with the cat named Tizzie used to call out into the night, "Here Tiz! Here Tiz!"

The problem getting started was the decision whether to write the article as a candidate for WL&C or for inclusion in *U.S. BOAT & SHIP MODELER* as a construction article. If written as a construction article, then another article should be written for WL&C in the same issue! As I, among other chores, am desperately looking forward to putting the finishing touches on a Stuart 7A engine, I decided to talk about PUFF's building in a style different than the usual



Stern view shows coxcombing and Turksheads. Photo on right shows Saito engine, gratings, exhaust system, chain from servo to whistle, and vertical shaft to an arm directing pushrod to throttle valve or regulator.

Our "Waterlines & Currents" columnist with Puff at an intermediate stage of construction.



Puff listens to Call of the Sea in conch shell held by Sirena in Hueneme Bay Fountain. Lady passer-by said, "This ship should be run 24 hours a day. It belongs in that fountain!"

"how-to" manner, and include a number of photos and drawings.

It was originally intended to power PUFF with the Stuart Double Ten Engine steamed with their Babcock 504 Boiler. Delays in delivery of the D-10 and the more timely provision of a Saito T3DR Engine resulted in the 504 steaming the beautiful product of General Saito. The engine specifications are as tabulated:

SPECIFICATIONS of the SAITO T3DR

Cylinder	Vertical, double-acting 3-cylinder
Bore	12mm (.47 in.)
Stroke	12mm (.47 in.)
Valve type	D slide valve
No load revolutions	5700 RPM (app.)
Steam pressure	2 kg/cm^2 (28.4 psi)
Maximum torque	1250 gram centimeters (.0904 pound feet)
Length	145mm (5.71 in.)
Width	70mm (2.76 in.)
Height	100mm (3.94 in.)
Weight	915 grams (2.02 pounds)
Cylinder capacity	8.1 cm^3 (.492 in.^{3})

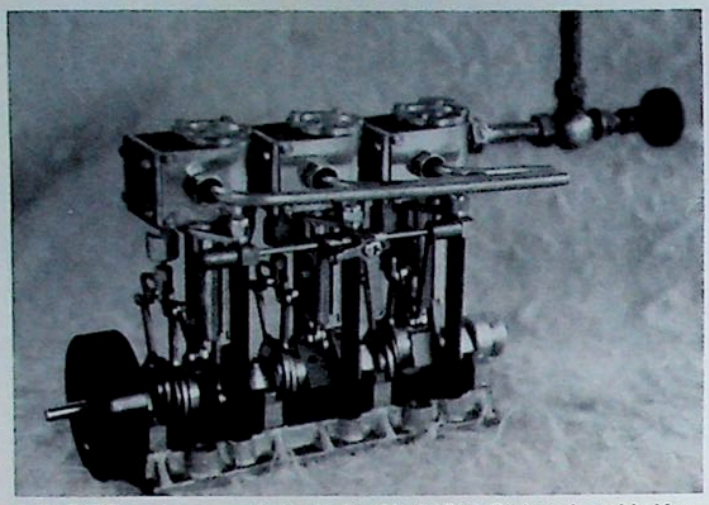
The above tabulation is fairly self-explanatory except the last item, cylinder capacity. This is the displacement of a single cylinder (stroke times piston area), times two (since each cylinder is double-acting, or pressure is alternately applied to each side of the piston in one shaft revolution, which doubles the stroke), times three (number of cylinders).

An interesting side-note is the fact that the double-acting principle was the second patent of Watt. He was having patent infringement problems with Newcomen, whose water vapor engine operated at, essentially, one atmosphere pressure. The double action patent was clearly a new concept and an invention.

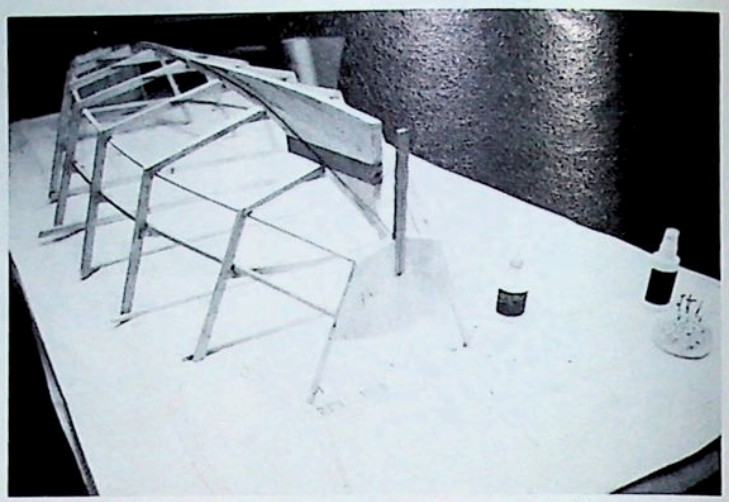
The T3DR is a beautiful, mostly brass, engine that is very well constructed. The reverse gear is of the interesting and very effective Stephenson design, which enables a forward/neutral/reverse, with no throttle capability. Engine speed must be provided by a separate throttle valve, or regulator. PUFF uses the Saito B2-G regulator, which is a rotating cylinder valve very similar to that found in R/C carburetors used in modern glow engines designed for model speedboats and aircraft. While marginally possible to use a single servo with two arms to operate both the Stephenson FNR gear and the throttle, adjustment and throw problems are completely eliminated if two servos are used. Too, if different engines and steam valves are used (the Saito products require very little actuator torque), the summed torques and traverse requirements may exceed the servo specification.

The radio equipment used was the Ace Commander, a truly nice system of five channels. I understand the Commander now comes with five or seven channels. PUFF only used four; rudder, forward/neutral/reverse, throttle, and whistle. I am considering using the fifth for turning a mini tape recorder on and off. With prerecorded answers, I can call out the questions and start/stop the playback to get the proper answer! The Commander is available without servos, which is convenient for marine use. We all have servos, and it allows the choice of servo size, "right or left hand," a channel-operated power switch (such as the

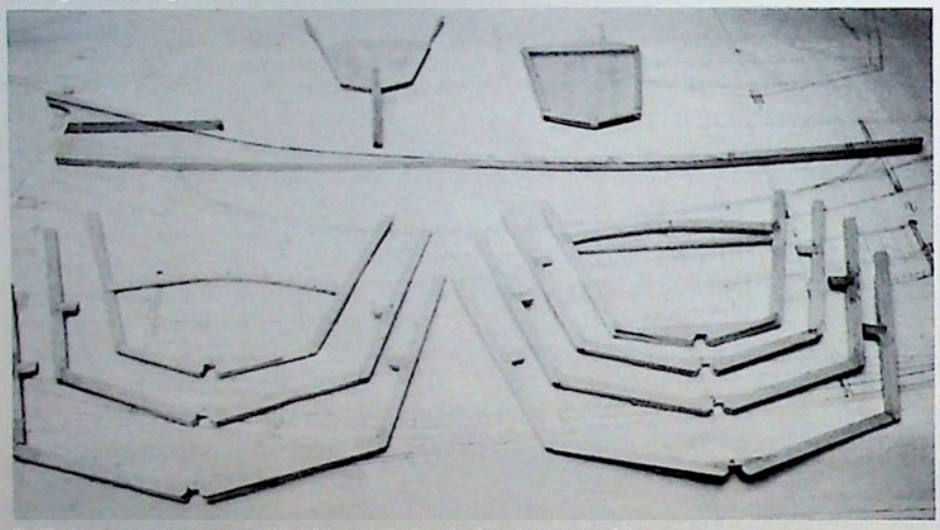
Cut-down Pic & Save cookie pan provides boiler safety. Floorboards not yet installed.



Saito D3DR engine as vended by United Model Dist. Globe valve added for testing before engine installed in Puff.



Rear view of frame, ready for blanking. Note placement of chine and shear clamps. These are vital for rigidity.



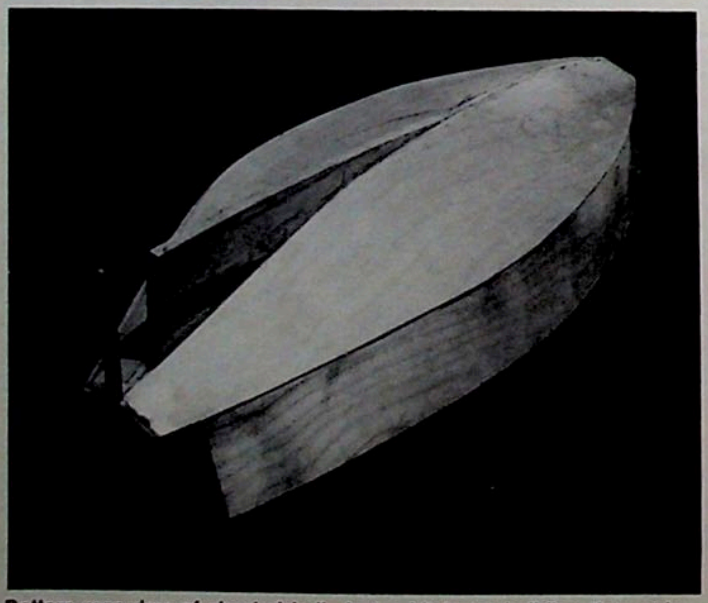
Puff's frames, transoms, and keel, ready to begin framing assembly.

ACE PS-1210), or a selector switch, or on/off switch by High Sky. With the Ace and High Sky equipment, possibilities are almost unlimited . . . at least within the bounds of our imaginations! PUFF can carry a lot of additional weight, so dream away!

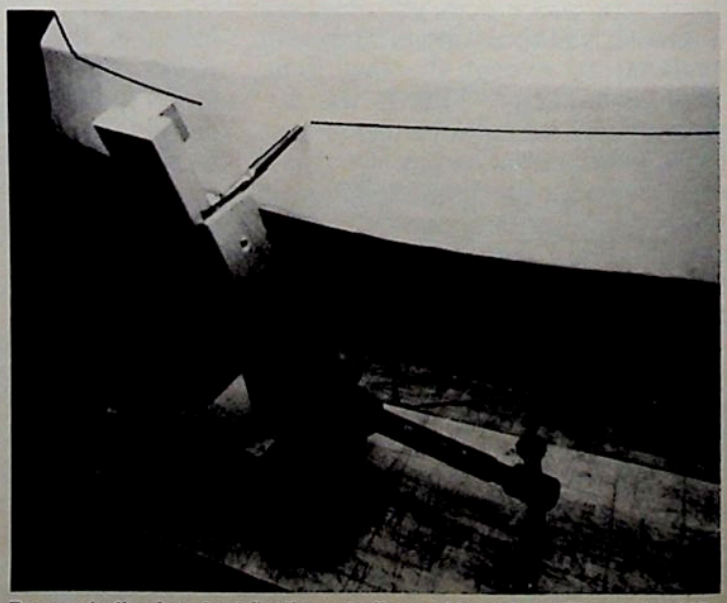
I also used the Deans base-loaded vertical whip antenna for the receiver. This little gem was obtained from Ace at the same time as the Commander. Be sure you get the correct one for your receiver frequency, for they are band-matched. About 15 cm high, the same range was obtained as with the regular antenna! This was with the Commander transmitter antenna collapsed, of course. Hayes Products also produces a whip antenna. Whip is stainless spring steel. Also, as I was using several makes of servos, all with Futaba connectors, I used Ace-supplied Futaba-to-Deans adapters.

Looking at the plans, you will note quite lavish use of balsa, which is a switch from the more exotic woods normally used in model boat construction. Unless you cut your own wood strips from a hardwood plank, it is a less expensive way to go. Too, you will always have the *exact* size available. PUFF will be quite strong enough with these scantlings. You will please note that I use birch plywood for deck, hull skin, and cockpit sole.

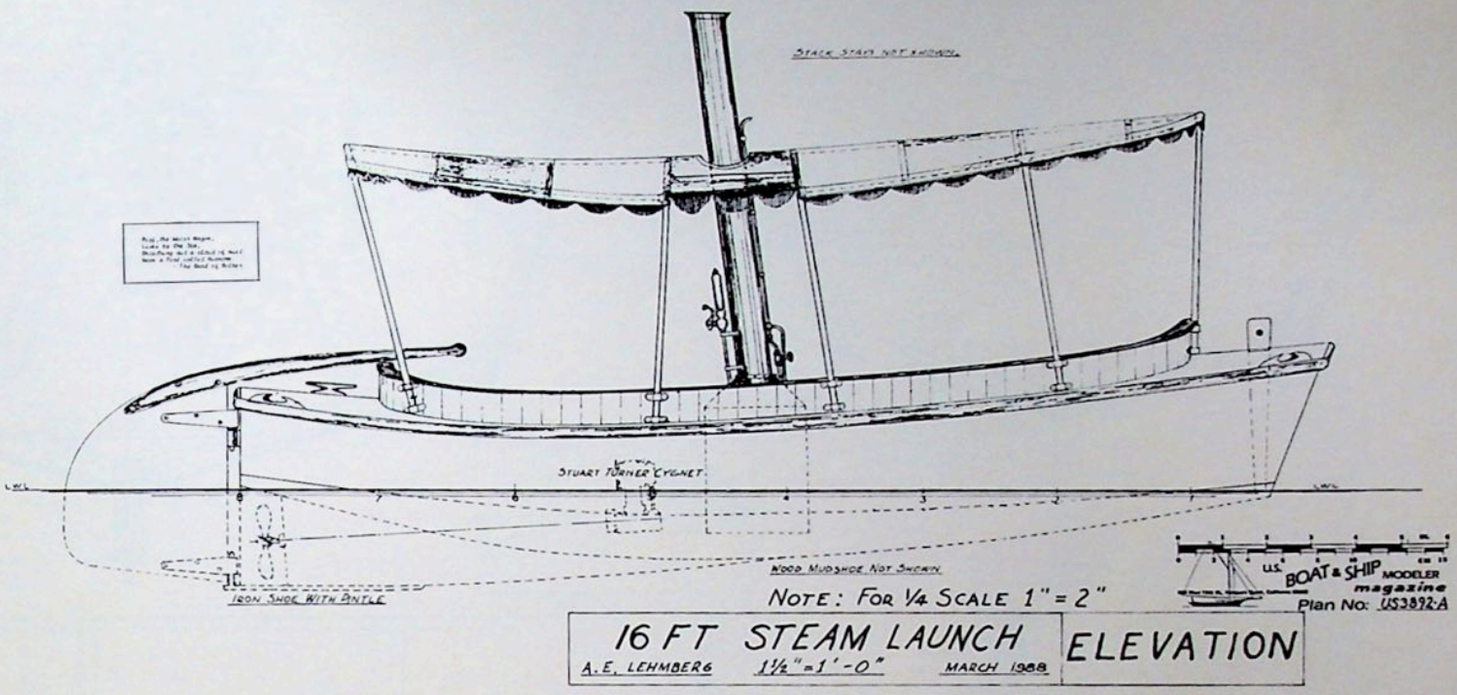
A lot of detail is not included, not because this is part of scratch building, but different boilers and engines may be used. PUFF could be electric powered with the motor under an engine box and the batteries in a dummy boiler! This would be a good use for the Ace Throttle and Reverse module! Another good power option would be Bob Davis's CO_2 engine, with the gas bottle in the dummy boiler and a servo



Bottom rear view of sheeted hull. Just a bit faster building than strip planking!



Demonstrating how to strike the waterline and boot-top with a makeshift height gauge.



FULL SIZE PLANS AVAILABLE — SEE PAGE 78

operating the valve in the engine head. PUFF makes a great steamer, whether real or "simulated!"

For a "real" boiler, a pan should be located beneath it to protect the wooden boiler support. It is a good idea to place some asbestos paper between the pan and the wood . . . unless you are a carcinoflapegator. Over in the kitchen gadgets section of a big hardware store (I find Pic-and-Save great for cheap metal goods), look for a cookie sheet. Take a magnet with you, for you don't want a quality stainless item . . . or even aluminum. Cut it to the size you want (you have allegedly selected one dimension that is correct) and lap/solder the seam with soft solder. See, that's why you wanted the cheap "tin" instead of the higher-priced metals.

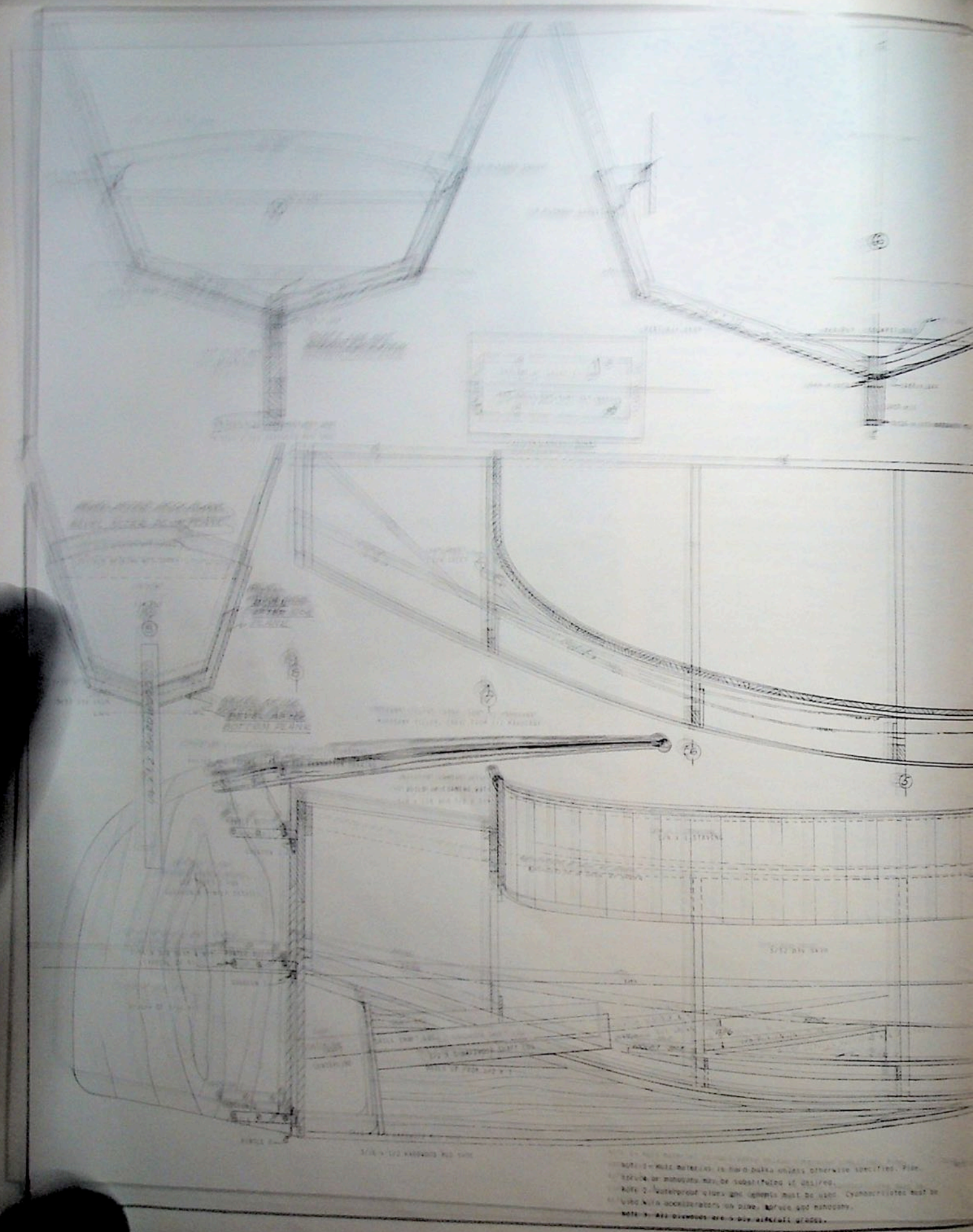
There are a number of ways to build the canopy outline, bows, and stanchions. I used 1/4-inch aluminum tubing and 1/4-inch copper tubing elbows and tees, cementing joints with bicarbonate of soda and Hot Stuff. Inside the stanchions I placed 5/32 steel wire, some soda and Hot Stuff. Twyla, my first wife, made the canopy out of cotton broadcloth. Ironing the seams prior to sewing made the choice of cotton the right one. The fringe is cut-down, of course. The cutout openings make boarding and leaving the boat easier, and also provides a place for a tall person to stand up. On the stanchions I suggest winding on cockscombing and some Turksheads. I recommend *Encyclopedia of Knots & Fancy Ropework,* Graumont and Hensel, Cornell Maritime Press, New York, 1944. Paint everything white before sewing on the cloth top. After the frame and canopy is complete, make the stanchion holder fittings and fasten them to the cockpit coaming, after its completion and varnishing, of course. This top goes on and off so simply! It is fun to run without the top at times, and easy top removal makes some maintenance operations a lot easier.

I located the receiver antenna aft and placed all four servos under the rear seat. The receiver is bagged for protection ("one never knows, do one?" to quote Satchmo) and, with the receiver battery, is wedged in place with foam rubber under the rear deck. Incidentally, the Ace Commander battery, switch and charge jack, are all one unit, not too killin' expensive. It is suggested that this "power assembly" and servos be purchased for each boat application, it being a simple matter to change the receiver from one hull to another. PUFF's switch and charge jack are mounted in a bulkhead under the rear seat, port side. On my launch "Patricia" *(U.S. BOAT & SHIP MODELER,* Spring 1989), I have them in the door (that's *door* not *hatch)* to the area under the foredeck, where the battery and receiver are located. Patricia has the Deans antenna on the foredeck, obviously.

The placement of the boiler and engine selected must put the resultant center of gravity in the proper place. This location lies on a vertical line passing an inch and a half aft the backside of Frame 4. Ideally, the center of the boiler should also fall on this line, so that the amount of water in the boiler won't change the hull fore and aft trim. If you do it right, trim balance will not be required. If trim is required, build a "tool box" and put it under the seat on the light end. Use enough lead shot, in a plastic bag, to balance the craft, and place that in the tool box.

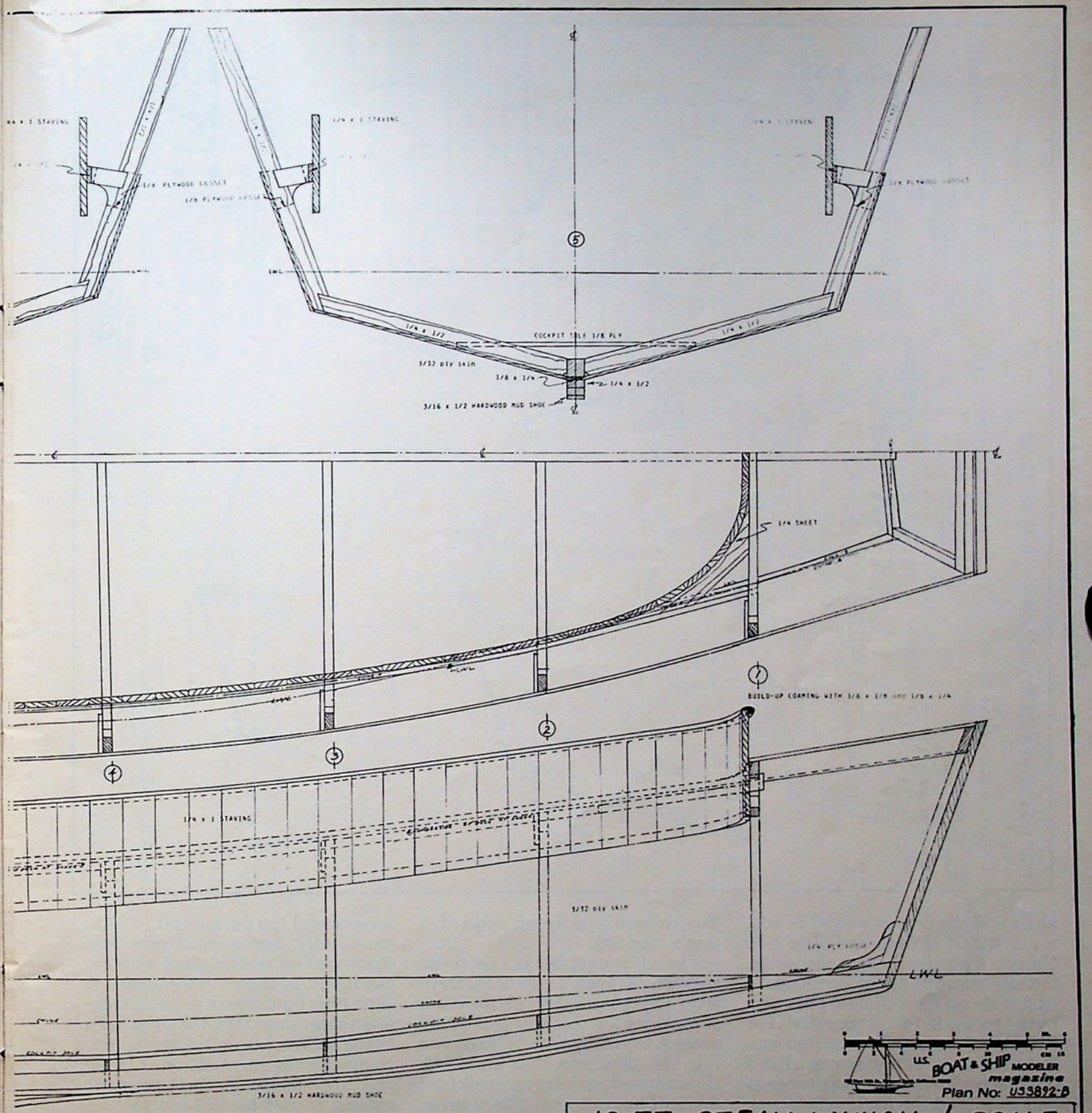
You must use a universal joint to couple the engine shaft to the propeller shaft. The Saito T3DR has a 4mm

Loctite epoxy resin used for fiberglassing and surfacing, recommended by author.



FULL SIZE PLANS A

US BOAT & SHIP MODELER



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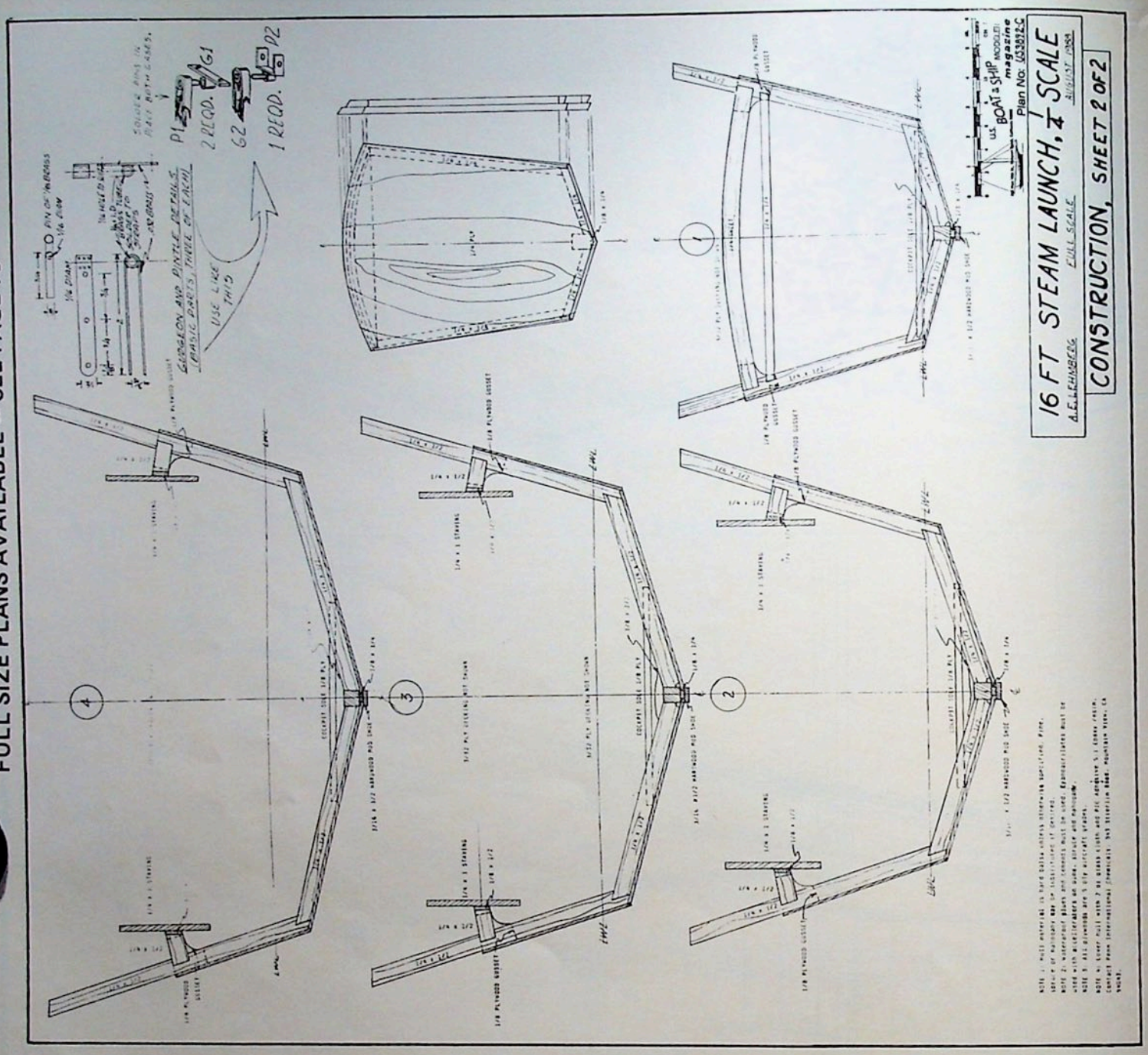
FULL SIZE PLANS AVAILABLE -- SEE PAGE 78



shaft and the propeller shaft is 5/32 music wire. The Octura OC509 F & M Universal Joint worked out admirably. Octura has a fine line of universals to fit a wide range of shafts. They also have a good selection of propellers. For PUFF, I used a propeller casting I had. It had a four inch diameter that I trimmed to 3-1/2 inches some time ago and measured the pitch, which was about six inches, as I recall. This gives a pitch to diameter ratio of 1.7.

The rudder has a conventional aircraft rudder horn connected to a bicycle spoke pushrod via a Du-Bro threaded clevis at the horn and a ball/socket at the actuator arm. Use your magnet when you buy the spoke, and get several that fit your clevis thread (2-56). It is easy to thread an iron rod, but hard to thread a stainless. Too, the iron is easily soft soldered, if that's your bag.

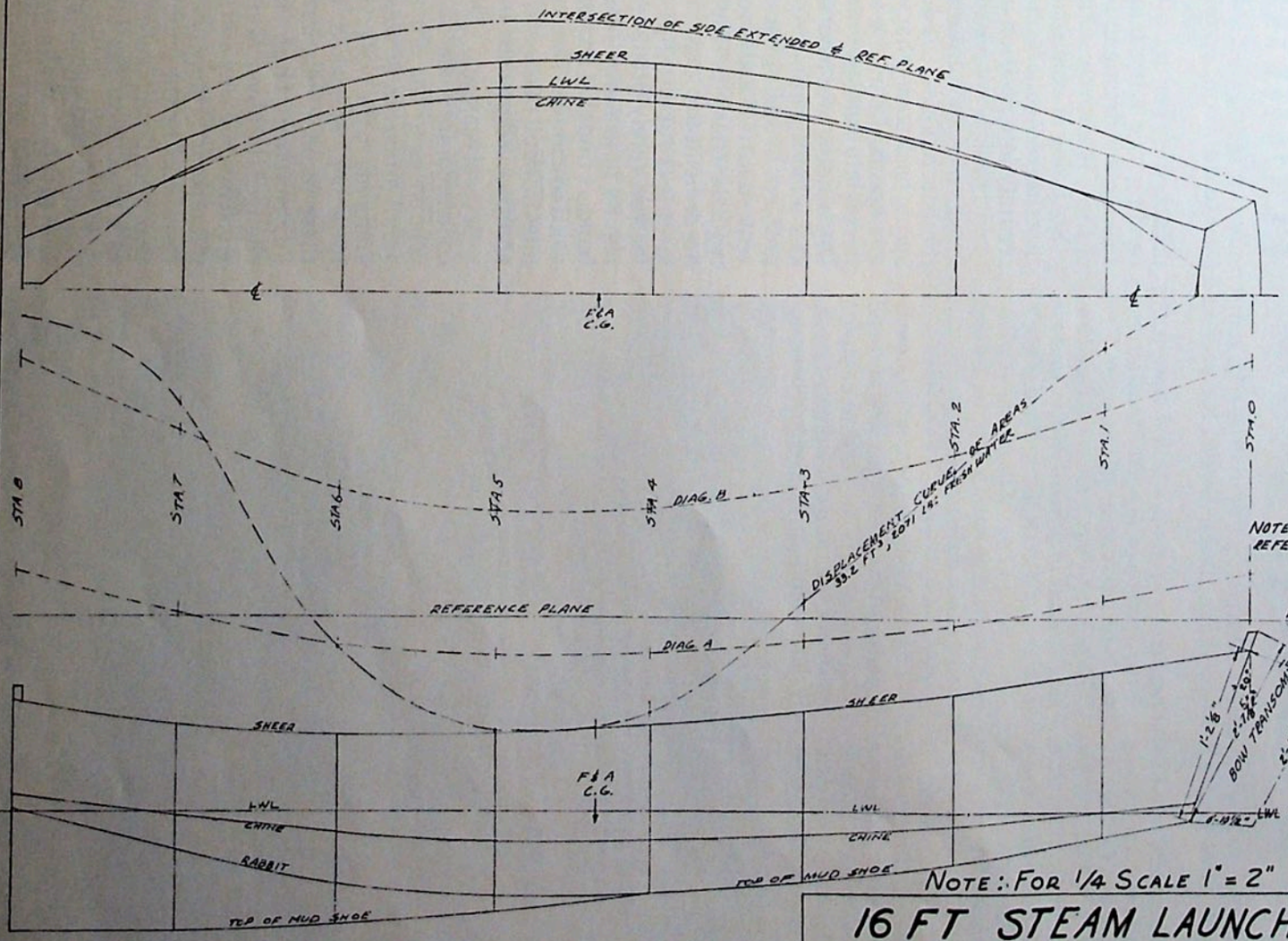
The whistle servo has a short rod connected to a ball/socket on the servo arm. This passes through the beam supporting the rear seat and terminates in a small eye. An "S" hook into this eye connects a tiny, brass link chain to the whistle lanyard pull. I use the Ace Commander auxiliary on the box left side for the whistle. Full down is off, full up is a BLAST.

The reverse gear (FNR) is operated by a short rod from the servo ball/socket to a threaded clevis at the Saito FNR link. This function I control with the Commander throttle next to the rudder control.

The throttle is a little complicated. Using two 5/32 Nylon Landing Gear straps (Du-Bro #239), two Du-Bro 5/32 nose-wheel horns, a shaft of 5/32 music wire, and a small pine base block, make a vertical shaft with the two horns, as shown in the photos. A shaft from the top horn to the throttle, and a short shaft from the lower horn to the ball/socket on the servo arm, completes the installation. The remaining Commander throttle, on the outside, is used for this control.

This is a very effective way to link the servo to the throttle and has virtually no play. I would like to take credit for it, but I must admit that I stole the idea from John Sullivan, of Sullivan Floats Fame. This is the way he controls the water rudders on his floats with his "air rudder" servo located high in the fuselage. This gives

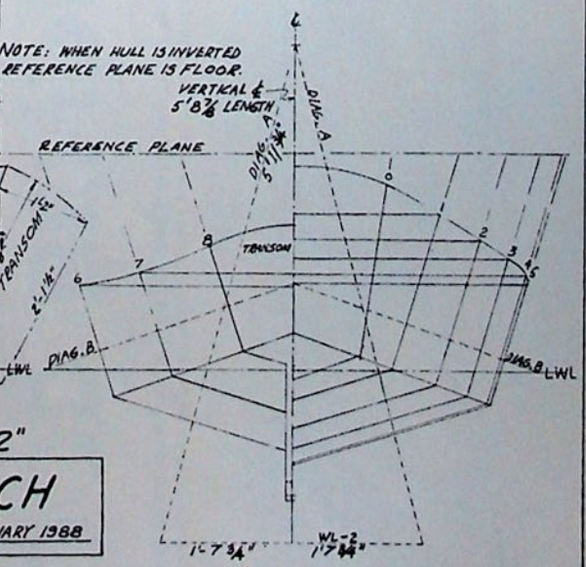
Continued on page 55



NOTE ON TABLE OF HULL OFFSETS:
1) OFFSETS IN FT-IN.—EIGHTHS. (2-5-3 IS 2'5 3/8")
2) LEFT SIDE OF SECTION (END) VIEW IS LOOKING AT THE HULL FROM THE STERN. RIGHT SIDE IS THE VIEW FROM THE BOW.

TABLE OF HULL OFFSETS

STATION NUMBERS	0	1	2	3	4	5	6	7	8
SIDE ELEVATION									
DISTANCE FROM STA. 0	0-0-0	2-0-0	4-0-0	6-0-0	8-0-0	10-0-0	12-0-0	14-0-0	16-0-0
REF. PLANE TO: SHEER	0-4-6	0-8-2	0-11-5	1-2-4	1-4-4	1-6-0	1-6-1	1-4-5	1-1-0
:LWL	2-6-0	2-6-0	2-6-0	2-6-0	2-6-0	2-6-0	2-6-0	2-6-0	2-6-0
:CHINE	–	2-6-0	2-8-0	2-9-4	2-10-3	2-10-5	2-9-1	2-6-5	2-3-3
:RABBIT	–	–	–	–	–	3-7-0	3-5-5	3-0-0	2-5-4
:TOP OF MUD SHOE	–	2-9-7	3-2-0	3-4-7	3-6-5	3-9-4	3-11-3	4-0-3	4-0-3
INVERTED VIEW									
DISTANCE FROM STA. 0	0-0-0	2-0-0	4-0-0	6-0-0	8-0-0	10-0-0	12-0-0	14-0-0	16-0-0
CENTERLINE ℄ TO: CHINE	–	1-3-2	1-9-3	2-2-5	2-5-3	2-5-7	2-2-6	1-5-6	0-7-6
:LWL	–	1-2-2	1-10-1	2-3-3	2-6-7	2-7-3	2-4-1	1-6-3	0-0-6
:SHEER	1-2-5	1-9-6	2-4-0	2-8-3	2-11-1	2-11-2	2-7-4	1-11-2	1-0-6
CHINE TO REF. PLANE DISTANCE MEASURED ALONG STA. SIDE	2-6-6	2-7-4	2-9-7	2-11-3	2-11-4	3-0-9	2-11-6	2-8-6	2-5-2



NOTE: FOR 1/4 SCALE 1" = 2"

16 FT STEAM LAUNCH

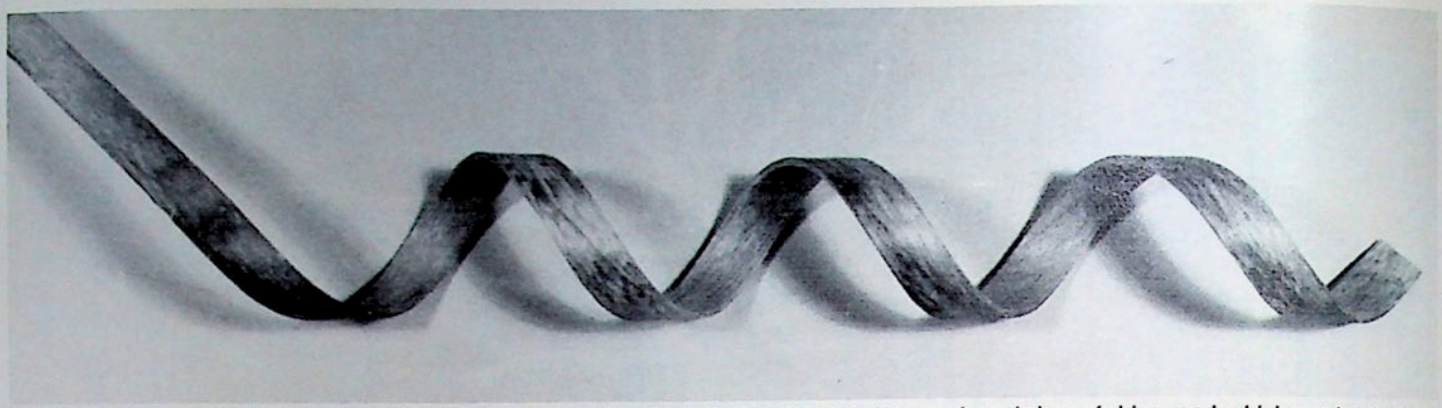
A.E. LEHMBERG | 1½" = 1'-0" | JANUARY 1988

LINES

U.S. BOAT & SHIP MODELER magazine

Plan No: US3892-D

FULL SIZE PLANS AVAILABLE — SEE PAGE 78



Probably the most convincing example of Bud Croshere's wood bending technique is this corkscrew-shaped piece of alder wood, which was treated as per the text and then wrapped around a 3/4-inch dowel. Alder wood is a member of the birch family, and is pretty tough stuff.

WOOD BENDING TECHNIQUES

By BUD CROSHERE . . . If you've ever wished, in the middle of a construction project, that some of the sticks or sheets were already pre-bent to shape, this article is for you. It's easy to do . . once you know how.

This article was presented at the 1st Annual Southwestern Model Shipbuilding Symposium, October 15, 1977, sponsored by the Nautical Research Guild, So. Cal. Chapter. It is used by permission of the author, and of the Ship Modelers Association Newsletter, in which this article also appeared.

The author, Mr. Bud Croshere, is retired from aerospace and related industries, and has extensive experience in model building, both ships and airplanes. He has developed many techniques, such as the one presented here, on the use of materials and tools, both hand and power, to make life easier and more interesting for the modeler.

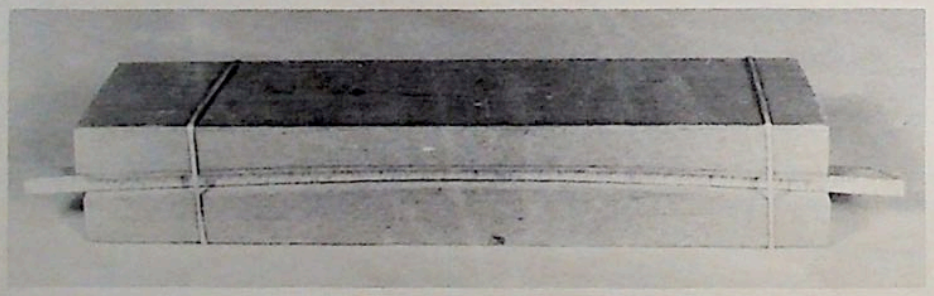
We hope to present more of Bud Croshere's work in the near future, and ask your comments on this method of working wood and your ideas about other construction or tool use techniques that need extended description.

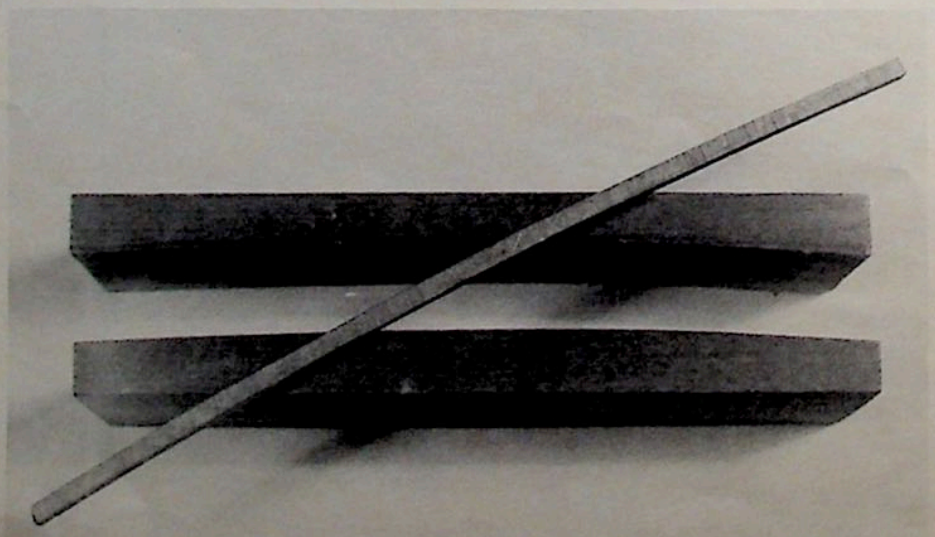
The model shipbuilder is frequently faced with the need to accurately bend strips or sheets of wood to complex contours that must be followed closely. Heretofore, this need has been approached either by steaming, dry-bending over a hot mandrel, or cold soaking and drying in position. None of these is entirely satisfactory.

Steaming or cold soaking requires that the piece to be formed be clamped securely into position until dry. Frequently this is not possible in the confined areas encountered. In both of these techniques, the dried piece will spring back somewhat when released and special fastening is required to force it into position while it is secured. Dry bending over a hot mandrel (such as a soldering iron) can eliminate the problem of springback, but it is essentially a trial-and-error process that requires tricky multiple bends that are difficult to control. Except for the simplest forming problems, this method rarely produces satisfactory results in practice. Most model ship builders find that accurate bending of wood to complex shapes is one of the most difficult tasks, and one for which an improved method is necessary.

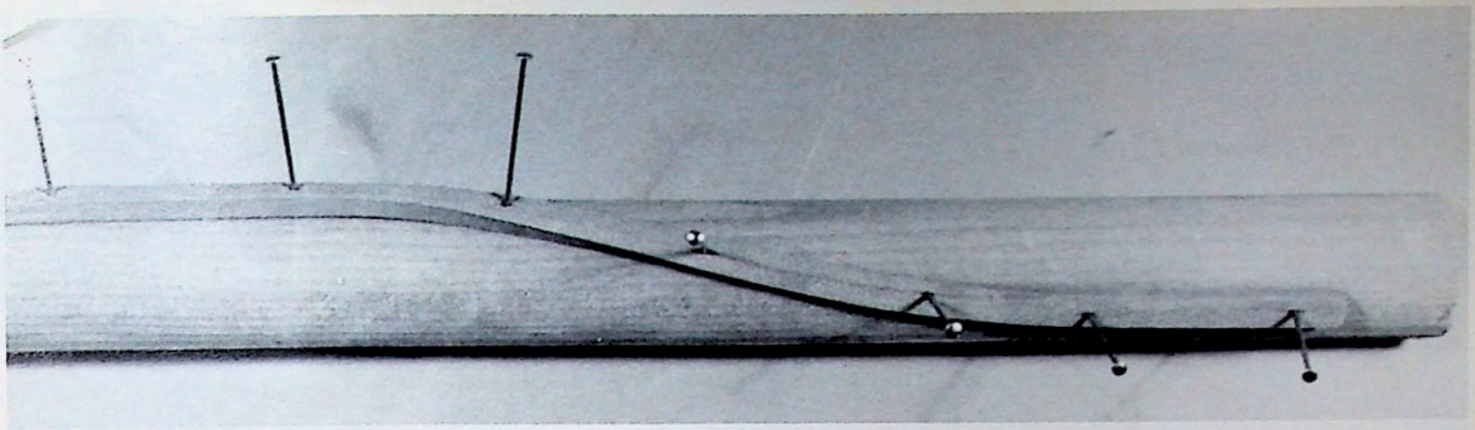
Several years ago, there appeared in contemporary model magazines vague references to the efficacy of adding small amounts of weak household ammonia to the water in which wood to be bent is soaked. In support of these recommendations, there were suggestions that the ammonia changed the physical character of the wood in some way and thus rendered it temporarily more pliable. Although tests based on the published information were disappointing, they served as a prod to further investigation.

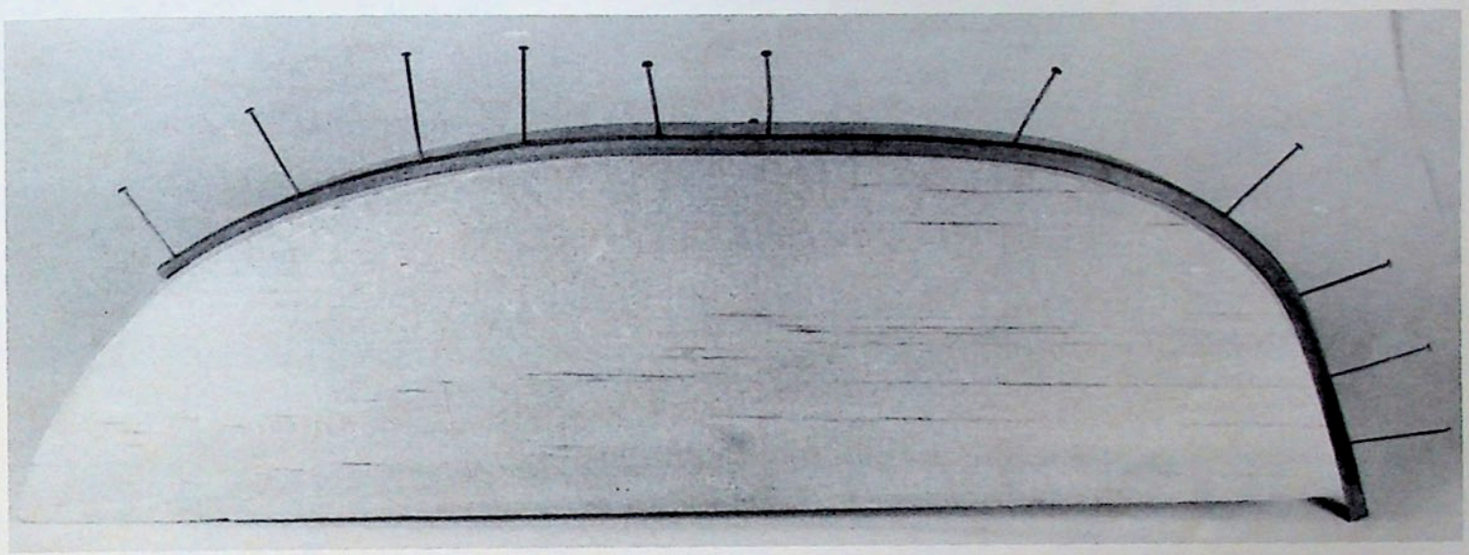
This report summarizes information gleaned as the result of correspondence with the Weyerhaeuser Company and the Forestry Colleges of





No matter how slight the bend, the finished pieces will hold their curve permanently. One of the best things about this method is that there is no loss of strength in the treated strips of wood.



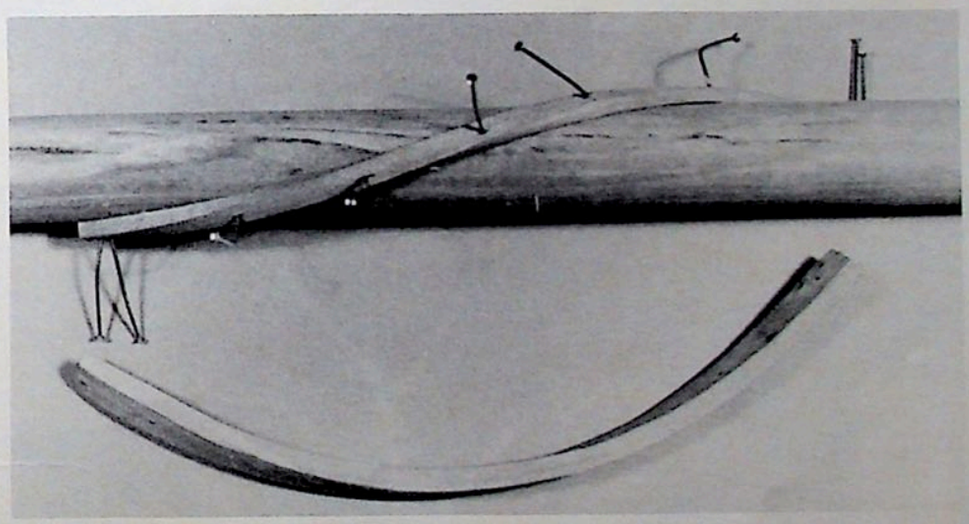


Syracuse and New York Universities, concerning the theoretical and practical aspects of treating wood with various concentrations of ammonia. Also reported are results of practical tests made by the author using simple equipment found in most model makers shops. These are based on the extensive experiments conducted by various wood product laboratories who kindly furnished much valuable information on the subject.

A list of the references consulted is included for the benefit of those who want to explore the subject further.

DISCUSSION

For the present purpose, wood may be thought of as an orderly assembly of microscopic elongated hollow cellulose tubes held together by an adhesive called lignin. When wood is deformed by external loads, forces are set up in directions tending to cause slippage between these cells. The strength of the wood depends not only upon the amount of cellulose in each cell, but also upon the ability of the lignin to prevent slippage between adjacent cells. Conversely, success in forcing wood permanently into arbitrary shapes requires temporary plasticization of the lignin (thus permitting good reorientation of the fibers), followed by complete restoration of its adhesive strength (thus locking the cells into their now positions).



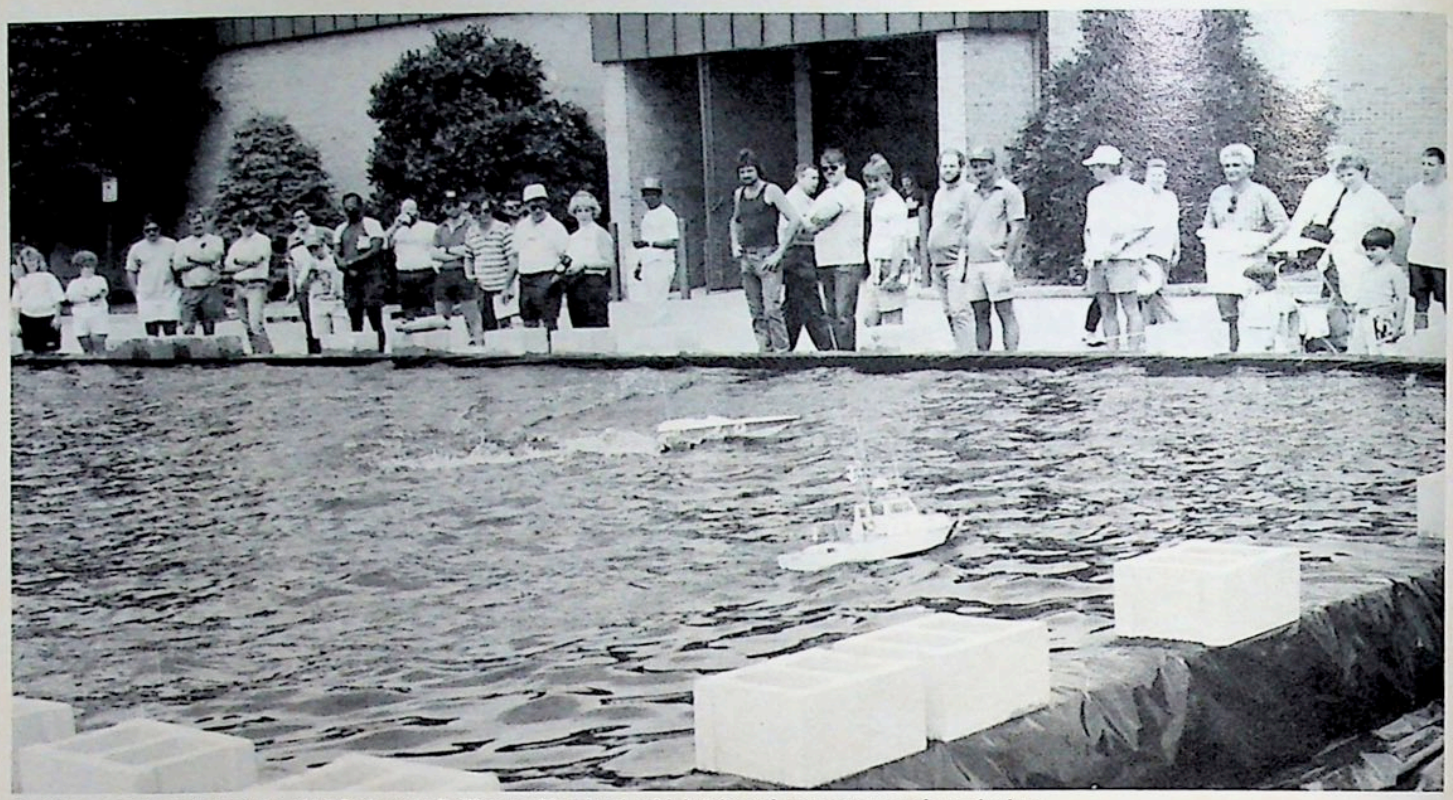
More examples of what can be done with this wood bending technique. Very little, if any, springback occurs when the parts are removed from the forms. Note that pins, which leave unsightly holes, were only used here to hold wood in place for clearer photos.

The lack of complete success using steam or cold soaking to bend wood into intricate shapes and having it remain bent with little springback lies in the inability of these methods to cause adequate plasticization of the lignin adhesive agent.

Although the chemical composition of lignin is not simple nor well understood, its role in providing wood with its remarkable strength and durability is well known. Further, the tendency of lignin to become plastic in the presence of weak alkaline solutions is documented. Chemical science has long known that ammonia, a gas, is readily soluble in water and that the solution is alkaline. Further, a solution of water and ammonia will evaporate, leaving no residue.

From the above, one can hypothe-

Continued on page 54



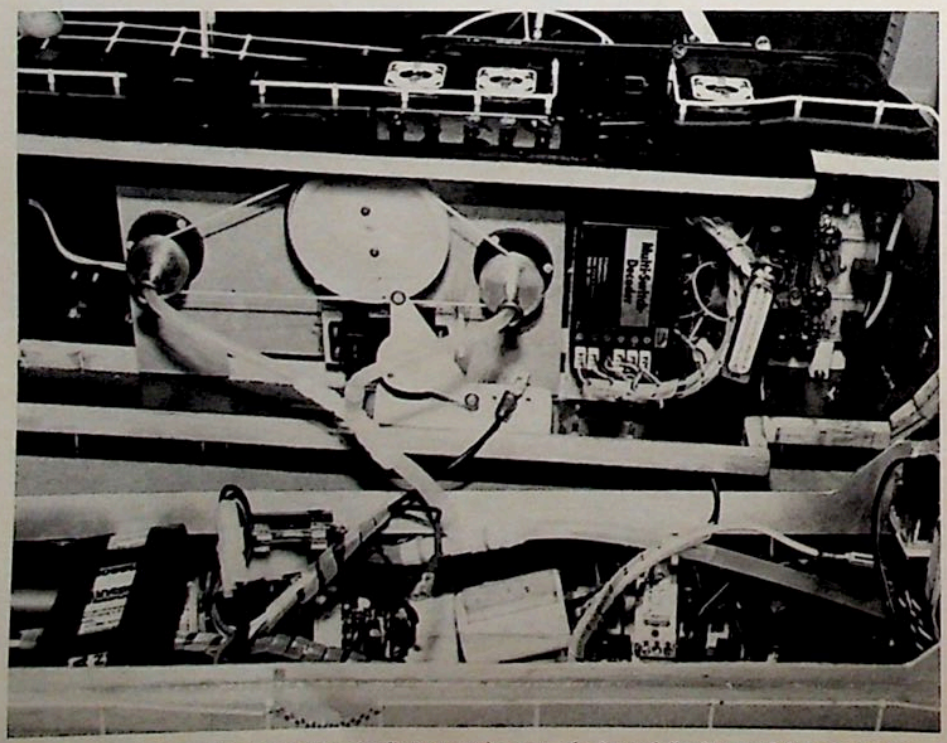
Outdoor pond erected at the MARC show in Baltimore, Maryland, which takes place every year in early June.

INDUSTRY "SCUTTLEBUTT"

By RALPH WARNER . . .

Hey kid, do you want to go to a hobby show? Once again I have borrowed from the title of one of the columns in our sister publication, *Model Builder*. It is appropriate, since as you read this you should be planning to attend the shows that are scheduled for this fall.

The shows vary greatly in their size, intent, and features. Your local club may sponsor a mall show in your area to improve local public relations and give non-modelers a chance to see that we are really involved in a hobby sport that is not only fun but can be a tremendous outlet for skills and vicarious adventure. These are more than big boys' toys.



Trade shows give modelers the opportunity to examine manufacturers' display models, such as this firefighting vessel in the Robbe Model Sport booth at the IMS show.

Some of the mall shows are very well organized and even have demonstrations of models. An example is the show put on each year by modelers in Milwaukee wherein the water operation is performed in an indoor pond. This much more effective than static display and more fun for the modelers involved.

Beyond the mall shows are the expos sponsored by clubs or industry groups. The schedule of these larger shows has continued to grow. If you live near one of the large metropolitan areas, you probably have a show nearby. At least, a short trip by expressway will get you to one.

The bigger shows will have the participation of manufacturers who will have all of their products on display and will be available to answer your questions. Many of the shows are tuned to the interest of modelers by offering additional activities such as swap shops, awards for static display models, demonstrations of boat, car, and in some cases, flying models.

Continued on page 56

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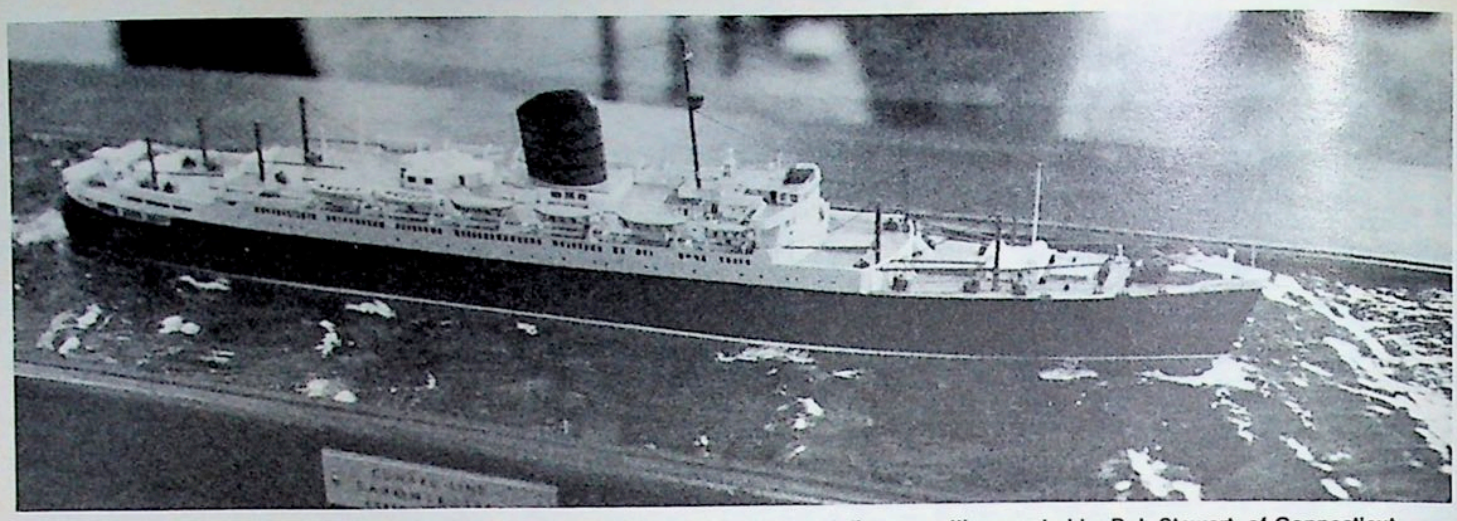
THE COMPLEAT MODEL NAUTICAL PERIODICA



The trim-looking Cunard liner "Saxonia" on an idyllic cruise; both the ship model and diorama setting created by Bob Stewart, of Connecticut.

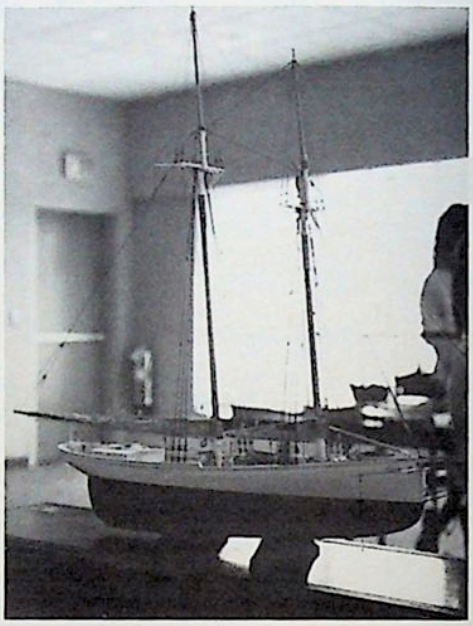
The MODEL SHIPWRIGHT

By PETER SORLIEN

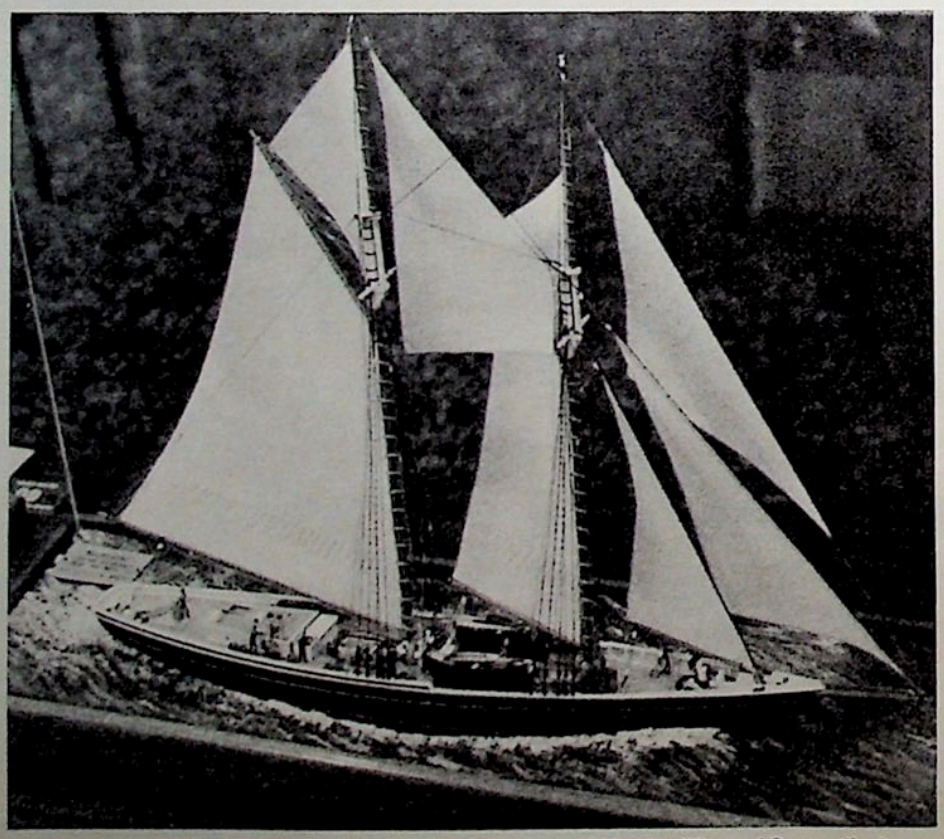
Some of the world's best modelers are notorious recluses. Just as an artist is supposed to be dreamy-eyed and underfed, so the archetypical modeler is intense and intolerant, intolerant of distractions and of anyone less expert than themselves, especially other modelers.

If this is true, then how can modelmakers' conventions . . . hundreds of recluses in the same room . . . flourish as they do? Top professional modelers attend them, and rub shoulders with rank amateurs. Ancient sail buffs talk with contemporary steamermen, and the most conservative of craftsmen in wood admire models in plastic. Modelers of all stripes seem to find encouragement in numbers.

If the program is a good one, every participant can come away with a new idea, a new challenge or a new goal. I had the good fortune to attend the Combined Meeting of the largest ship modeling clubs in the Northeast on June 5th; it was a good example of meetings being held across the country.



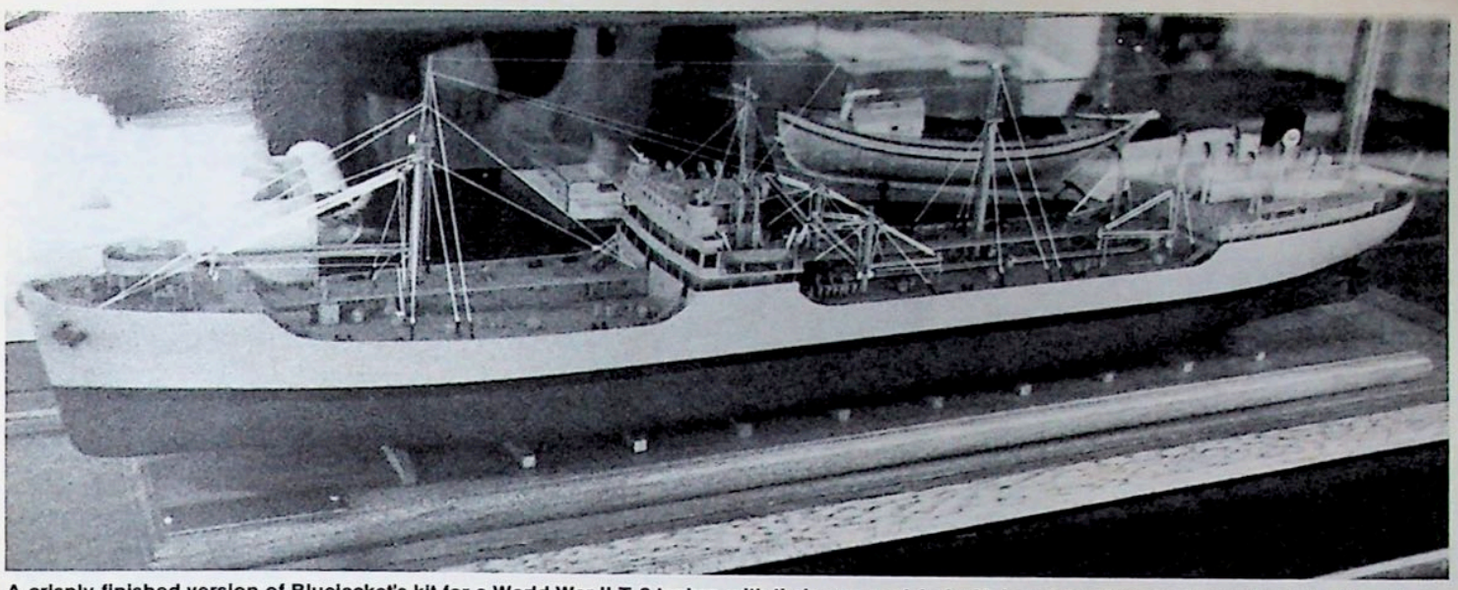
The sturdy plumb stem fishing schooner Carrie Philips, also modeled by Bob Stewart.



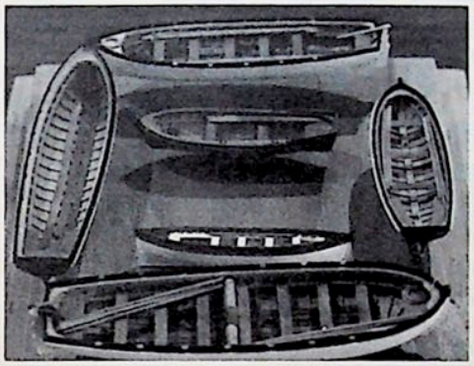
Another model displayed in a life-like diorama setting, all created by Jim Wiser, of Connecticut . . . the famed Bluenose II at sea.

The clubs from Connecticut, Long Island, and northern New Jersey first got together for a "monster meeting" in 1981, at Mystic Seaport Museum. They quickly outgrew the facilities Mystic could offer. The USS Constitution Ship Model Guild from Boston joined in the third year, and doubled attendance. Mitchell College, which has a pretty campus in New London, Connecticut, is now the regular site, even though sponsorship rotates among the clubs. New London is about midway between Boston and New Jersey, and is an active naval and yachting port offering plenty to see after the meeting.

The Long Island club, led by Robert Miller, was sponsor this year, and laid out a full program beginning at 9:00 a.m. They also added some delightful touches, like having a pretty blonde,



A crisply finished version of Bluejacket's kit for a World War II T-2 tanker, with their new model of a Maine pinky sloop in the background. American manufacturers of kits were well represented.



The gigs and other small craft Jim Creighton of Connecticut has finished to go with his 1/96 model of the clipper "Glory of the Seas," already more than two years in the making, with much more to go.

indomitably cheerful, greet us. She passed out name badges to all registrants, and a numbered token to every model as it entered the room. There must have been 75 models arrayed on folding tables, and one of the pleasant surprises was a "competition" judged by popular vote of the attendees.

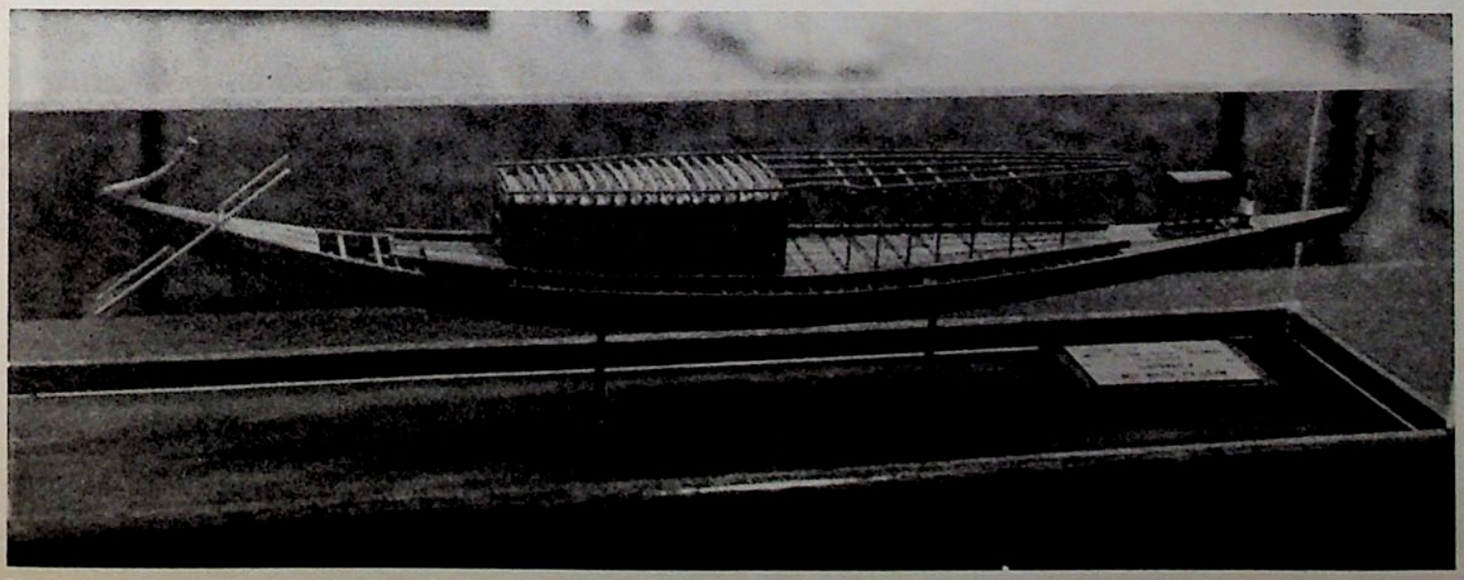
The range of vessel types and modeling styles represented was extensive. As always, there were a good number of square-rigged ships: a few American clippers, a Constitution, a Santa Maria, a Mayflower, and a number of turn-of-the-nineteenth-century warships. There was also a modern merchantman modeled in waterline style, and a crisp looking version of Bluejacket's WWII tanker (T-2) kit. And at the far end of the room were two huge models, six foot plus, of state-of-the-art American warships, radio controlled with spinning radar antennae and all.

Any prize for the oldest ship would have gone to a construction style model, showing backbone and ribs, of the Cheops boat, which was found dismantled in a Pharaonic tomb after thousands of years. This boat, assembled, is on view in a specially built glass building near the great pyramids.

Fishing boats were abundant, from schooner to whaleboat, as well as fishing boats adapted to other purposes, like the replica of Bluenose which Oland's Brewery built as its ambassador and trademark. There was even a model of Spray, the oyster boat

Continued on page 59

Lively diorama-style model of "Santa Maria" by Bob Miller, of the Long Island club; chairman of the meeting.



Oldest ship at the meeting; the Cheops boat found dismantled in a sealed chamber near the Great Pyramids, modeled by Jim Wiser, of Connecticut.

"Whaddya mean there's a runaway steam-roller headed this way!?" Boats lined up near the pits for spectators to view and for Concours judging. There were 93 boats entered! Care to count 'em?

JOHN SPANGLER MEMORIAL

OUTBOARD REGATTA

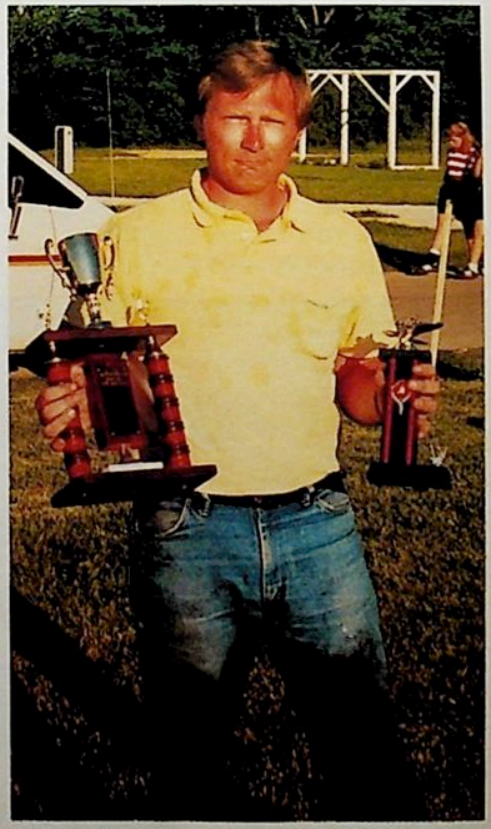
By BOB PREUSSE . . . One of the best reasons for having a model boat regatta is to raise funds for worthwhile charities. This annually run affair does it well, and it's a heck of a race to boot.

On May 28, 1989, the Minute Breakers Model Power Boat Club of Chicagoland, hosted the 11th Annual John Spangler Memorial Outboard Race. This year's race fielded 93 tunnel boats competing in four classes, making this race the largest outboard race in the country. With the help of the staff from Al's Hobby Shop, P.O. Box 449, Elmhurst, Illinois 60126, we were able to organize the prize effort, promote the event, assist at the race, and more important, to help a charity event be a success.

In the first 11 years we have raised over $7,000.00 for various charities including: Shriner's Hospital for the Children's Burn Unit, Elmhurst Memorial Hospital, Neediest Children's Xmas Fund and, for the past four years, The Lambs Farm, to assist in programs for the physically and mentally handicapped young adults. Some of you may have seen a special on Lambs Farm on the TV show "20/20" this past winter.

The race is held in memory of John Spangler who was an avid modeler and enthusiastic salesman for Al's

The contestant and pit area at the Lambs Farm race site is on plush grass and looks much like a picnic setting.



This year's winner of the *US Boat & Ship Modeler* perpetual novice class award, Dave Krumenacher, best of 18 entries.

Hobby Shop. John handled the Pro-Line repair center at Al's and repaired trays. At a young age, John was stricken with Hodgkins Disease. Even though he kept on with his work as if nothing was wrong, the disease eventually took its toll and we lost a good friend.

For this reason we will always keep the race a charity event, raising money for worthwhile causes with the emphasis for the boaters to have fun at a low-key event. In fact, over the years, we seem to attract many beginners because we allow the new boater a chance to get some race experience. We had 18 entries in the 3.5cc novice class which was won by David Krumenacher with 950 points. Our thanks to *U.S. Boat & Ship Modeler* magazine for providing the perpetual trophy for this class. Also doing a fine job were Tony Strum and James Stoorza, finishing a close second and third, with 750 points and 725 points respectively.

In the 3.5cc Expert class (41 entries total) Scott Jones, of Milwaukee, and David Preusse, had a perfect 1200 points which was hard to do because of rough water. In the runoff for first place, Scott prevailed. David Blough received third.

The 7.5cc class (34 entries, all experts-no novices here) Jim Fuschen, David Preusse, and Dave Schigoda ended in a three-way tie for first. Jim (Al's Hobby Shop) won the runoff and David received second again. Good job guys! Dave Schigoda left before the runoff so he received third place overall.

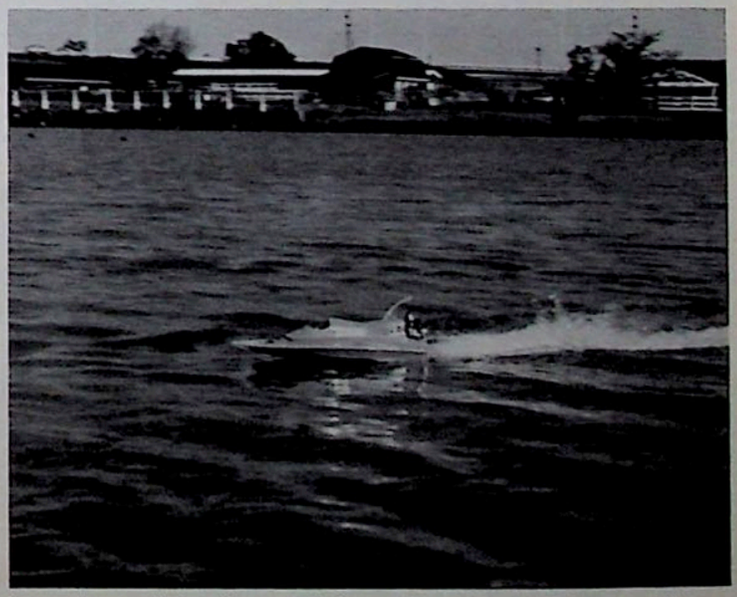
The only disappointment was the 11cc class which had only two entries. Scott Jones won and Bob Kensill was second. Next year, we will combine 11cc with the 7.5cc class.

Continued on page 44

Award winners (kneeling, l to r): Fred Hartley, Glen Immekus, Lynn Garnand (last year's novice winner). Standing (l to r): Jim Fuschen, David Blough, David Preusse, Bob Kensill, Dave Krumenacher, Scott Jones, Tony Sturm, James Stoorza.

First boat into the water on race day, unfortunately not identified.

Ron Zaker, Jr. gets his 3.5 tunnel in the mood to race.



Loosening up before the count-down starts. Hmmm. Driver must have leaned over to tie his shoe . . . can't see him.

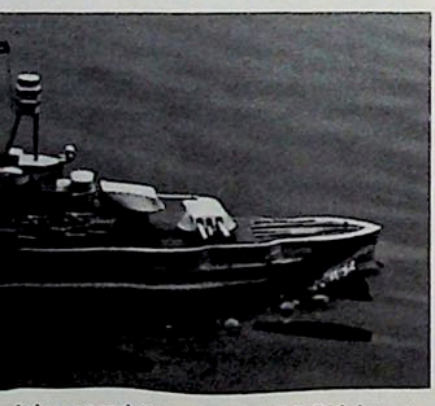
l Japanese Navy) Yamato could not be made into an effective combat warship, even with the cott Lide. It's just too large a target.

AT WARSHIPS IN ACTION!

n't have to sit on a mantel, only to be admired, or run about aimlessly odels truly go forth into battle!

ut this action packed event for model ting.

he opposing fleets were assem- bling for the tenth radio con- lled model warship Armageddon.



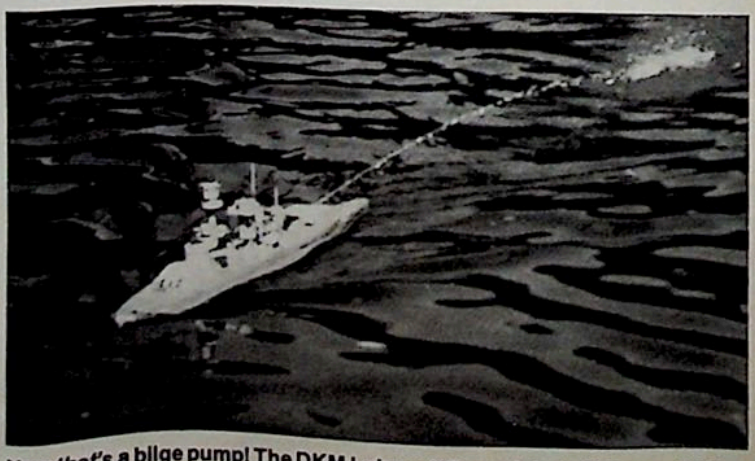
d slow speed, the author's USS Oklahoma

The Americans and British had assembled their ships to meet the ominous threat posed by the ships of the German and Japanese fleets. The coming gunnery duel would determine whether the world would be dominated by the Axis or liberated by the Allies.

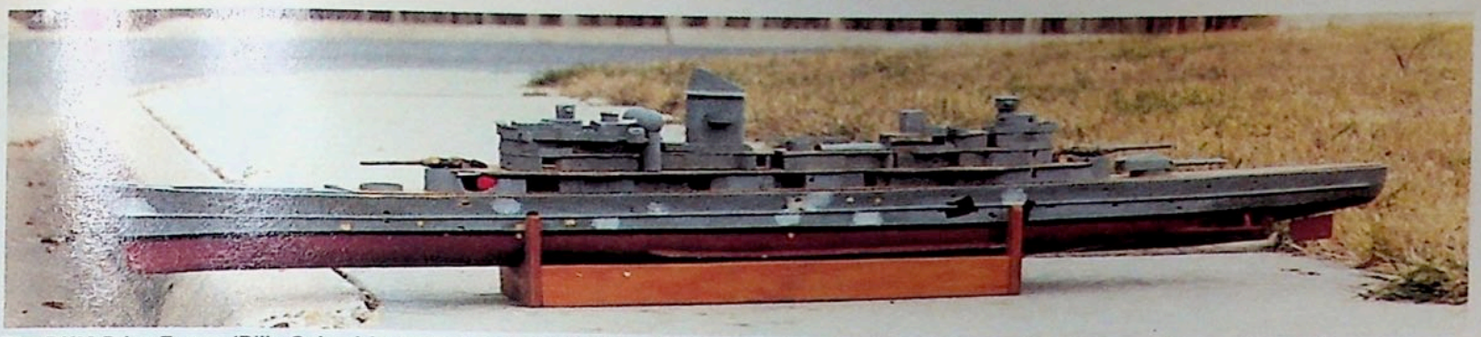
The ships and their captains came from all over the United States for this event. There was even a ship and captain from Australia here to uphold the honor of the Axis fleet.

What were these gallant ships that would go into harms way? The German contingent of the Axis fleet was comprised of two of the infamous battlecruisers named SCHARNHORST and their supporting heavy cruisers HIPPER and PRINZ EUGEN. The Japanese squadron of the Axis con-

, you just can't



Now *that's* a bilge pump! The DKM Lutzow ("Gross Admiral" Fluegel) tries hard to stay afloat as a result of heavy battle damage.

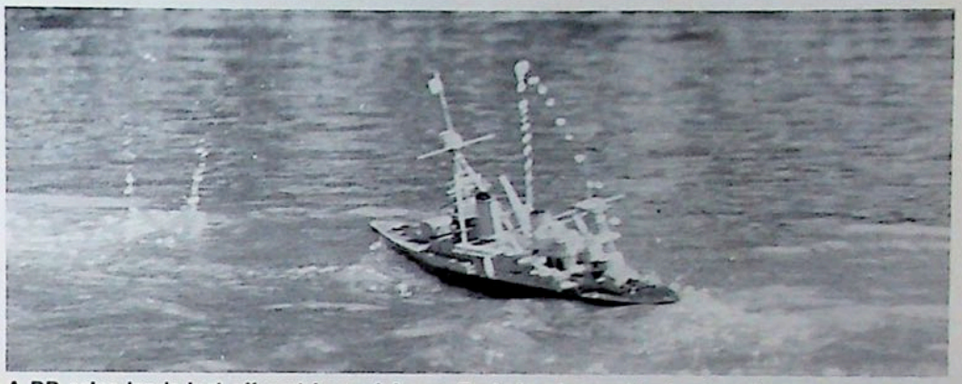


The DKM Prinz Eugen (Billy Gainer) in drydock for repairs after a training exercise with the USS Oregon City. Failure of the control system can have serious consequences. Count the BB holes and patches!

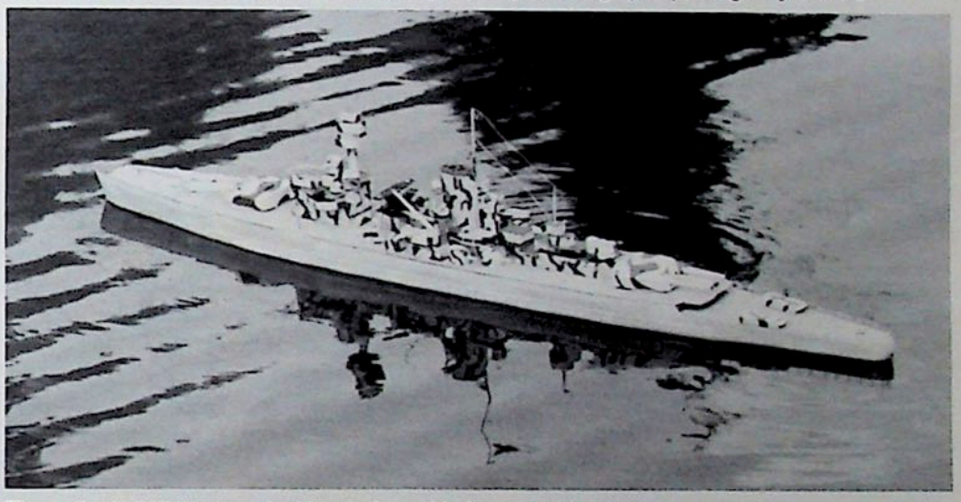
spiracy was composed of the fast battleship KIRISHIMA flanked by the heavy cruisers SUZUYA and MAYA. A fleet of seven ships in all. In reserve ashore were two LUTZOW class German pocket battleships, the Japanese battlecruiser HARUNA, and the Japanese light cruiser TONE.

As these Axis warships steamed belligerently into Allied waters there could be only one result of this aggression, a lopsided intensive bombardment of the outnumbered and undergunned Allied fleet.

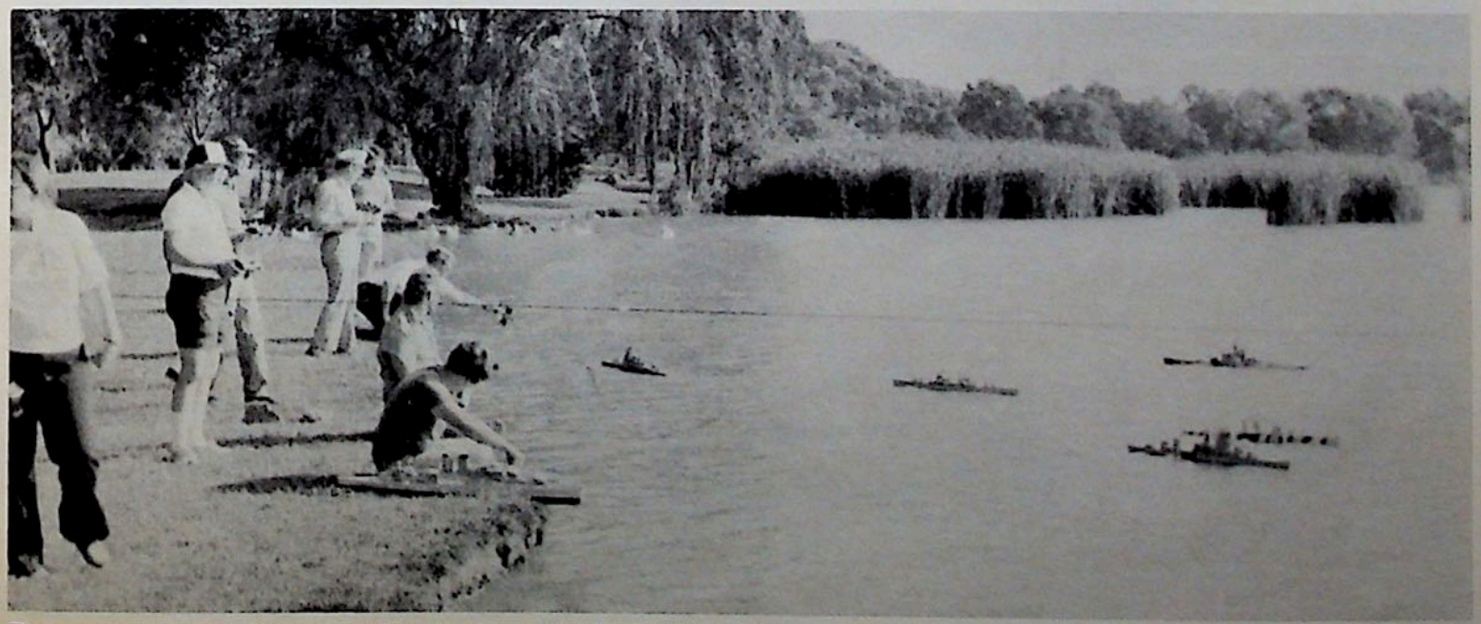
Allied reconnaissance had informed the high command of the Axis intrusion, so there could be no Pearl Harbor or Port Arthur surprise attack. The side of the fleet that had rallied to repulse the powerful enemy (and defend the freedom of a peace loving people) was not likely to carry the battle. The lone Allied fleet battleship, the SOUTH DAKOTA, was suffering engineering problems and was woefully slow. True, she was a seasoned veteran of many battles but facing three faster enemy battlecruisers would divide her firepower and reduce her effectiveness. The net fleet unit of significance was the WWI battlecruiser INFLEXIBLE. She could furnish support to the US battleship and



A BB salvo lands just off port bow of James Foster's advanced technology heavy cruiser USS Chicago. Broken water stream from midships is output of bilge pump, caught by camera.



The author's DKM Lutzow looking real good before acquiring battle scars.

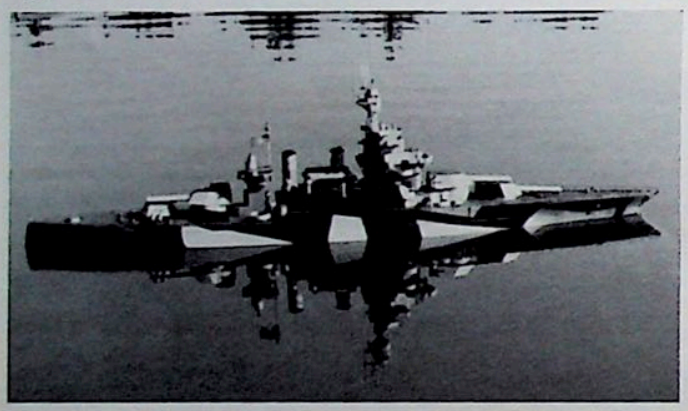


The scene appears peaceful enough, but there is actually a fierce tactical battle in progress. Engagement sites are carefully selected to allow prompt salvaging of sunken vessels so they can survive to fight again. Thompson Park Lake, Amarillo, TX, 1988 Nationals.

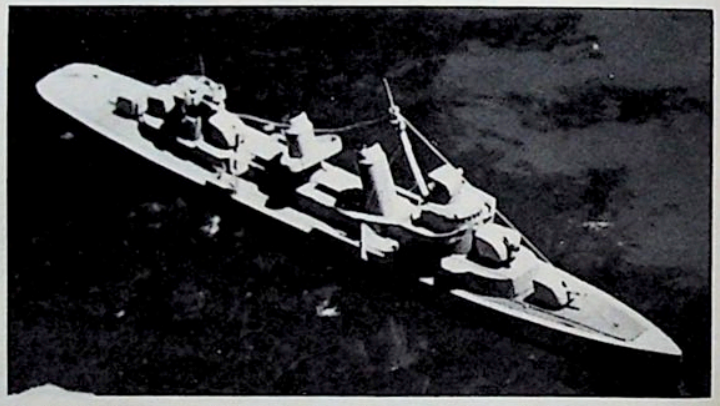
along with the light cruisers BELFAST and OKLAHOMA CITY, the Allies could hope to give the Axis Juggernaut a good show. Ashore and frantically preparing for any additional battles were the desperately needed battleship VALIANT, heavy cruiser YORK, and destroyers SULLIVANS and O'BANNON. These ships' crews had loudly cheered each Allied ship as it had passed the dry dock area on the way to the encounter with destiny.

At 0900 the two fleets sighted each other and began to deploy along favorable positions. Soon, fire was opened and the salvoes began to rip up the tranquil waters. There would be no more tranquility until the fleets had exhausted their magazines of all ammunition or until one fleet was destroyed. The range closed rapidly until the speeding wakes of the ships began to cross. One of the SCHARNHORSTs was so intent on closing range that she collided with the BELFAST. Fortunately the BELFAST was not badly damaged by the ram. She was not nearly so fortunate in the gunnery duel that followed. She took direct hits from three salvoes of the SCHARNHORST's forward battery. Exactly why the SCHARNHORST was bearing down on the BELFAST has never been properly explained by the Gross Admiral who had ordered the Axis fleet to concentrate on the easy kill, the OKLAHOMA CITY. The captain of the OKLAHOMA CITY had no intention of being the target of the entire Axis fleet and proceeded to employ his running gunning tactics. OKLAHOMA CITY took some hits while she was getting out of the heart of the Axis fleet and finally only the KIRISHIMA stubbornly followed. The fast Japanese battlecruiser KIRISHIMA chose to force an encounter with the OKLAHOMA CITY, but after numerous hits were registered in her bow, learned first hand of the effectiveness of the running, gunning tactic and broke off the exchange. The tempting target of the large slow American battleship SOUTH DAKOTA drew considerable attention. She was heavily hit but fought back furiously and forced the Axis ships to pay dearly for the damage they wrought. Finally the suffering ships of both fleets were running low on ammunition and it was time to break off the engagement. Far from being an Allied rout, the outnumbered Allies had withstood the

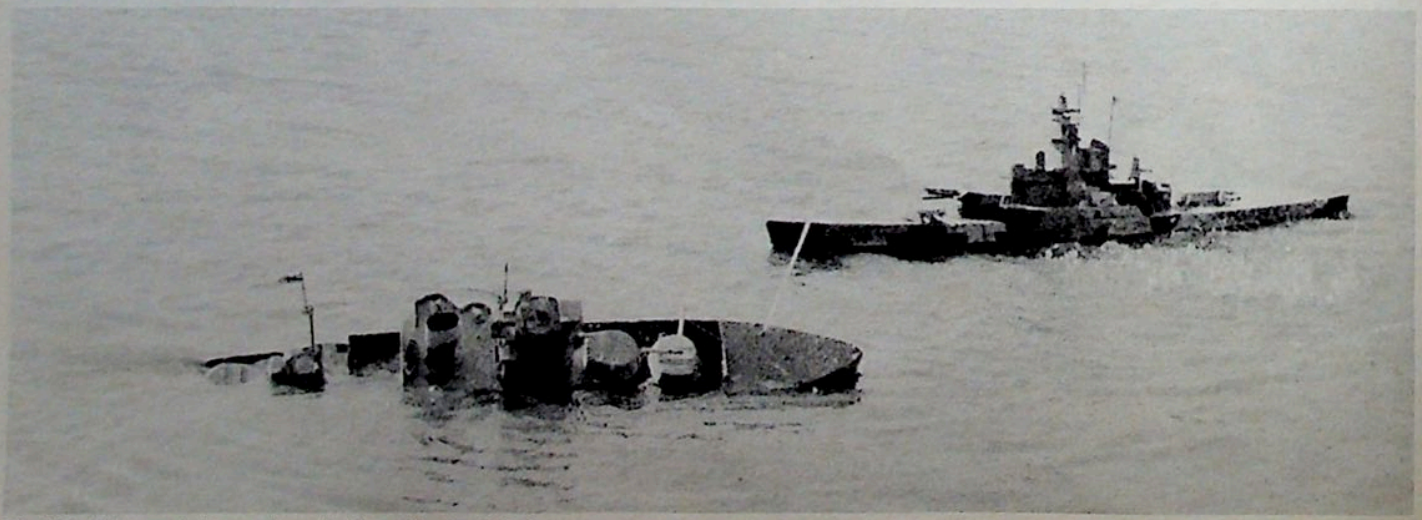
The IJN Haruna (Gerald Roberts) fast battlecruiser awaiting orders to start a second battle.



Nice but easy. The USS Colorado (Dan Dees) is a large, slow target when it comes to R/C warship battle action.



The USS O'Bannon, Fletcher class destroyer (Stan Watkins), was first combat warship to sink a combat submarine. Small and fast.



The Infexible goes to Davey Jones locker as the South Dakota steams by in pursuit of the Axis ship that did the dirty deed. Note stream from bilge pump hitting water off port beam of South Dakota.

The IJN Haruna didn't fare so well in second battle. "Portable drydock crane" comes out to rescue the badly listing battlecruiser.

Axis Fleet

KIRISHIMA	Cpt. J. Lide, Dallas, TX	420 pts.
PRINZ EUGEN	Cpt. B. Gainer, Amarillo, TX	410
SCHARNHORST	Gross Adm. Fluegel, Dallas, TX plus a 100 point penalty for ramming	350
SUZUYA	Cpt. Dirty Dave Haynes, Abilene, TX	320
HIPPER	Cpt. J. West, Amarillo, TX	220
SCHARNHORST	Cpt P. Futschi K. Melbourne, Austr.	190
MAYA	Cpt. S. Lide, Dallas, TX	20
	Total Points Lost	1930

Allied Fleet

SOUTH DAKOTA	Cpt. W. Montgomery, Annapolis, MD	1170 pts.
INFLEXIBLE	Cpt. M. Hayes, Glen Burnie, MD	560
OKLAHOMA CITY	Cpt. S. Watkins, Knoxville, TN	230
BELFAST	Cpt. T. Jass, Lombard, IL	180
	Total Points Lost	2140

onslaught without losing a single fleet unit and had forced the Axis fleet to retire for reprovisioning and repair. The Allied fleet units had suffered too and were eager to replenish and implement emergency repair for the next attack. After all, the battle was over but the war raged on.

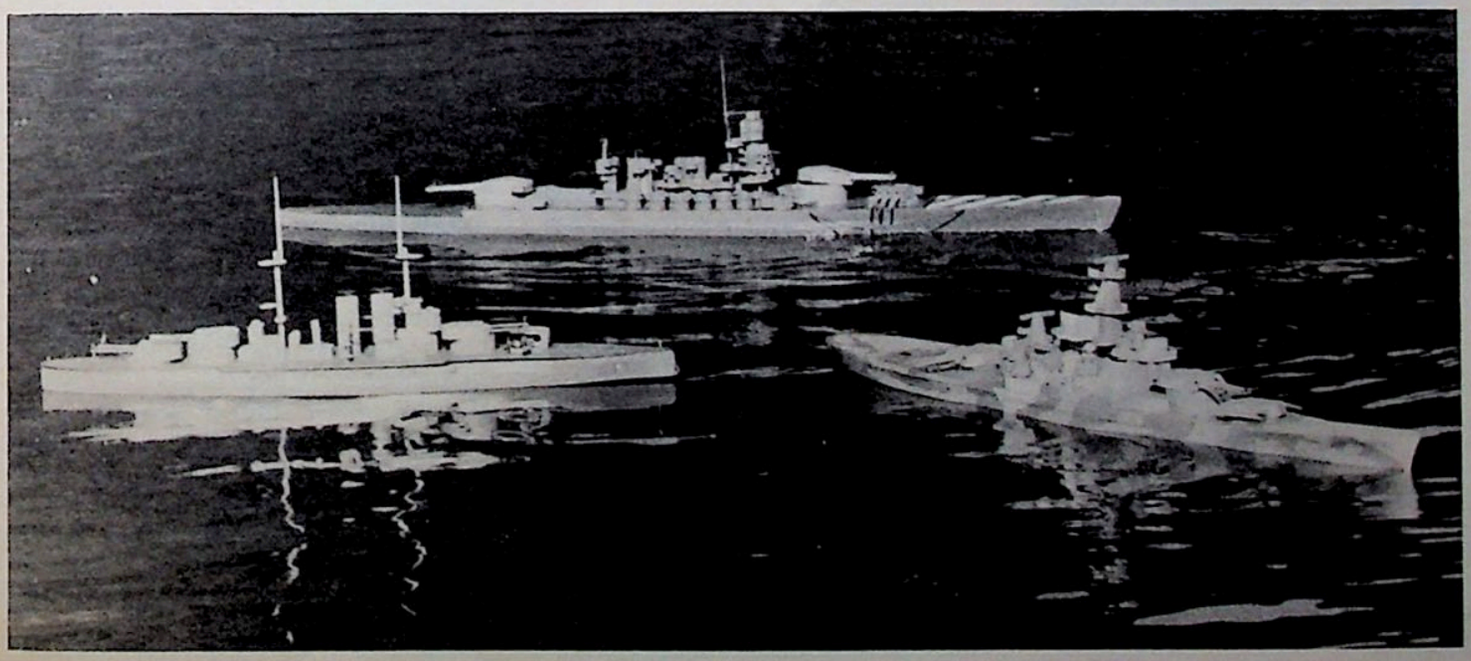
So how had these model ships really fared? The records of battle damage from the drydocks tell the tale. In recording the damage, points are scored as follows; each BB hole in the hull above the waterline is 20 points, each BB hole on the waterline is 50 points, and each BB hole below the waterline is 100 points.

The outnumbered Allied fleet had lost 2140 to 1930. The Allied fleet had forced the Axis to pay dearly for their marginal victory. The war of battle damage control and repair was a second battle that would now rage in the drydock during the lulls in the battling.

This was only the first battle of the first day of a full week of radio controlled model ship warfare for the members of the INTERNATIONAL R/C WARSHIP COMBAT CLUB at the 1988 Nationals of R/C Warship Combat held in Amarillo, Texas. This kind of action was repeated many times throughout the week with some variations of ships and types of battling. In the end, the outnumbered Allies managed to just squeak by for their first Nationals victory since 1984. The 1989 Nationals of R/C Warship Combat were just recently held at the 1982 Worlds Fair site in Knoxville, Tennessee during the week of July 10-14, 1989. *(We'll try to have a report in the Winter '89 issue. wcn)*

It usually takes several months of spare time work to build an R/C combat warship as until recently, all had to be built from scratch. A new company, SKUNKWORKS MFG., now offers various forms of kits for several effective Heavy Cruisers. These ships are definitely the best type for a beginner to build and battle. Many veterans also prefer cruisers to the larger ships. The ultimate for the combatant who can afford to have the work done for him is the ARF, or Al-

Continued on page 44



Battling R/C warships aren't brand new. These momentarily peaceful vessels were seen at the 1986 Nationals. Clockwise from back: Vitorio Venetto, Alabama, and Szent Istvan.

BOOKS

IN REVIEW

By PETER SHREEVES . . .

I was browsing through the local bookstore the other day and bought a popular pair of illustrated hardbacks on World War II. The first is *Steichen at War,* (Christopher Phillips) a large photo layout from a collection of U.S. Navy photographs taken by the Steichen team of Navy photographers. The text is devoted to Mr. Steichen's team and their wartime activities. The second book, *War at Sea,* (John Hamilton) is a history of the naval war illustrated solely by a collection of paintings by the author. The text is accurate and general enough to cover the topic, but the impact of the book has to be in the paintings which depict 176 naval and amphibious scenes in dramatic detail.

My first reaction upon leafing through Hamilton's book was to wonder if the wartime period, now nearly five decades in the past, had reached a stage in the public's consciousness that it could be condensed into heroic paintings and packed off to dusty museums along with John Paul Jones and the Alamo. Could there be a more valid justification for painting up the battles of WWII when nearly all the events seem so extensively photographed at the time?

The custom of painting naval battles is, of course, quite old. In centuries past it was the only way to illustrate a battle. Since oil painters did their work ashore it was an accepted fact that the portrait's accuracy was limited to the account of the event and the painter's knowledge of ships. The quality of the works varied from the studied canvases of Pocock to the garden variety of romantic paintings that flourish in any age. The documentary value of paintings was accepted within limits, but they did not have to suffer by comparison with photography.

The most obvious feature missing from the majority of wartime photography is color. As a model shipbuilder of WWII subjects, I am often frustrated trying to find the correct color for a camouflage scheme used in a specific theater. The model aircraft community seems to have this problem pretty well licked, but documentation on ship color schemes is hard to find. Unfortunately, oil paintings are seldom able to provide this information. In fairness, painters have the same problem I do in the lack of documentation and have the additional challenge of rendering their subjects in natural backgrounds and lighting conditions that change the colors drastically.

Here, perhaps, is the aspect of painting that gives it a value even in modern times. Seascapes and ocean scenes are infinitely different due to weather conditions, time of day, and locale. What can't be seen in photos from the war period are the brooding skies, the angry seas, and the dramatic interaction between ships and water. It is hard to accurately portray a visual image without color. The recent TV series, "War and Remembrance," contained familiar documentary footage that had been 'colorized' to provide a strikingly more realistic sequence.

The prospect that the vast photographic resources from the war period may be pulled out and reviewed for potential colorization is an exciting one. Not only would it make the material more accessible but it would also help preserve it, since photographic negatives have a shelf life that will render them useless in the next fifty years. There is no funding to preserve this type of document, and the commercial aspects may provide a means for it to be done. Perhaps, in time, the technology for video coloring and scene generation will become so common that painters will give up their brushes entirely. In this sense, painting may become a way to enhance our photographic legacy of the war.

Another limitation of photography is that one is limited to the perspective available to the man with the camera. In Mr. Phillips' book, one can trace the efforts of Steichen to get his men near the action and what was involved behind the scenes. Steichen's men were given an unusual amount of freedom, to go where they wanted, and photograph whatever they wanted, but that was only possible several years into the war. Wartime censorship was strict compared with our recollections of Vietnam and even if it weren't, reporting coverage was carefully controlled. A recent incident in the Middle East drew more correspondents than were active in the entire European theater of operations. Politics and social aspects aside, there are aspects of naval war that can't be photographed for technical or practical reasons, like a nighttime engagement or an aerial battle spread over vast distances. Photography is a wonderful technology but it also suffers from limitations as a documentary tool.

There is an expression that history is only the set of things which are written down. Comparing these two books has given me an insight into the nature of visual documents and a broader perspective of what different mediums can and cannot represent. There are those who may resent 'colorization' as tampering with original documents, but I think this is an oversimplification. Moreover, I have faith that the technology would be used wisely. One has only to compare Hollywood films made during the war period with more recent efforts like "Midway," and "Tora! Tora! Tora!," to understand that the appetite for historical accuracy, in general, is on the rise rather than in decline.

By the way, anyone wishing to explore some of our nation's photo archives can contact The National Archives, The United States Naval Institute, or one of many nautical museums around the country. Drop them a line describing what you are looking for and they will be happy to help. •

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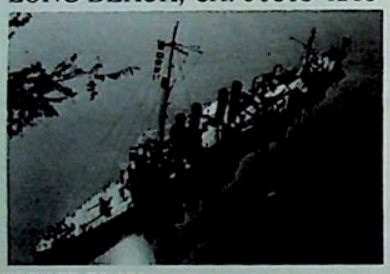

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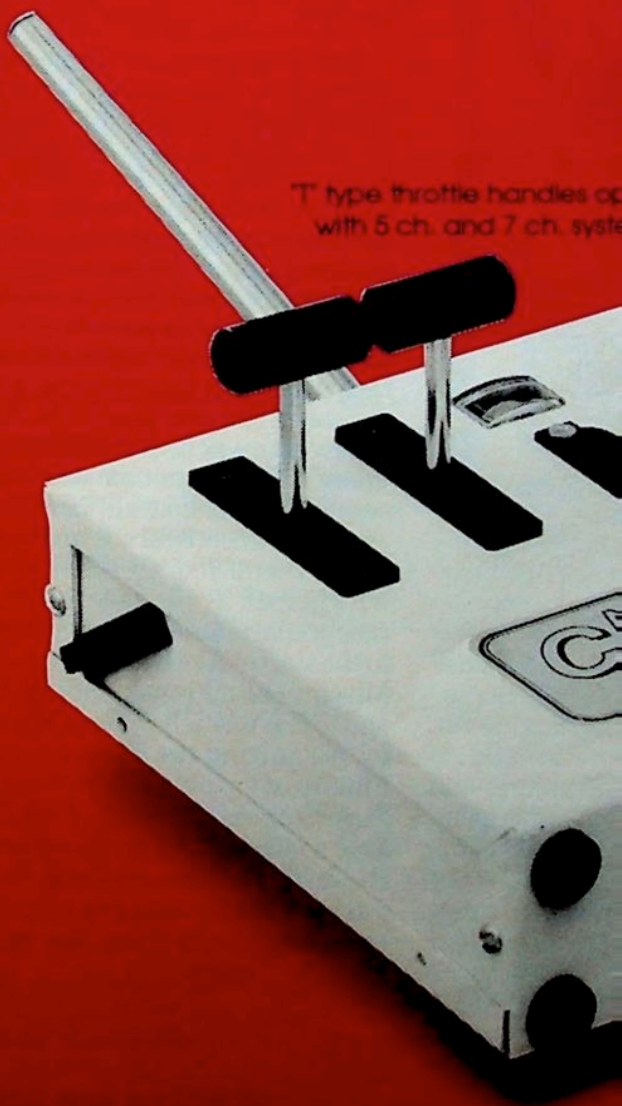

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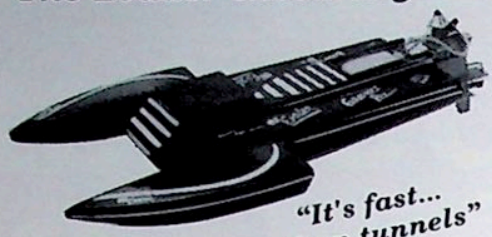

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Combat ..... *Continued from page 41*

most Ready to Fight. At $49.00 the ARF includes everything necessary to battle except the radio control unit (minimum three-channel), rechargeable drive batteries, and ammunition. It even includes a wooden case for transport and features a work platform built in. The basic ship kit without the BB cannons, motors, or hardware is priced at $104.00. Hardware and BB cannons are priced separately.

A new R/C Combat Association has been formed to enhance stability of construction rules to create stable ship construction standards. The new Associations rules also enhance safety requirements to reduce the likelihood of an accident and the consequent liability. The INTERNATIONAL ASSOCIATION OF MODEL WARSHIP COMBATANTS (IAMWC) encourages competition on a local level, nationally, and internationally. It provides a competition ranking and handicapping system, provides members with lists of other members, provides guidance information for the sanctioning of local combat activities, and provides a quarterly report. For information about the IAMWC, write to the author, at P.O. Box 23553, Knoxville, Tennessee 37933.

If the idea of "clearing the seas of Axis trash," or "infesting the seas AS Axis trash," appeals to you, you are potentially a warship combatant. To begin to realize your fantasy you will have to take action.

If you prefer a kit to aid in the construction of your ship you should write to SKUNKWORKS [illegible] P.O. Box 606, Dept. F, Batt[illegible] [illegible]issouri 65619, for informat[illegible]

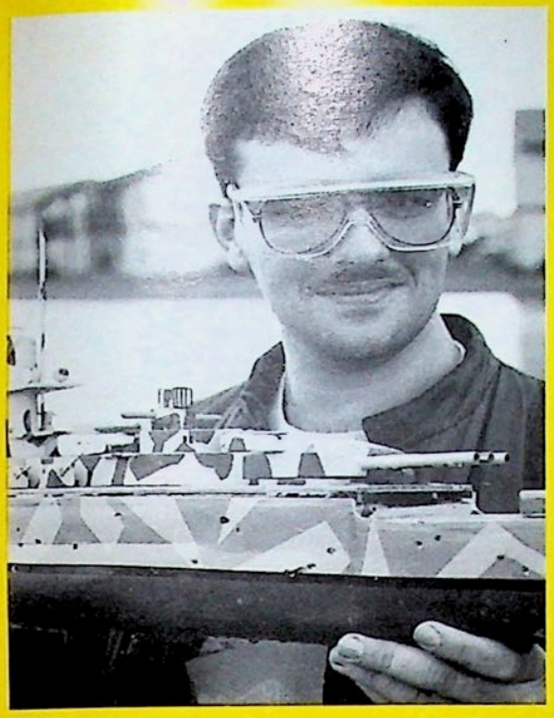
If the idea of s[illegible] ng is more yo[illegible] [illegible]rite to "J[illegible] Cir[illegible] for [illegible]

Spangle.

Due to rough [illegible] [illegible]ay, there were a high percentage of DNFs. When the drivers were a little cautious on the throttle we saw some good, even racing. Jim Fuschen, Terry Bakalar, Rich Chamberlain, and Rick Heisinger had a good heat in the 7.5cc class with Jim winning. Greg Johnson and Jim Preusse battled it out for four laps in the 3.5cc expert class until Jim found a hole in the water. Overall the race was fairly penalty free, which is the way a fun race should be. Another noteworthy achievement was Greg Shaw's first race competition since running tether boats in 1954. Greg, 35 years between heats is too long!

We would like to thank everyone who helped at the race, or with pre-race preparations. A special thank you to the staff of Al's Hobby Shop; to Mike Mischnick for his help calling the race, and to Gary Mueller, from Wisconsin, for organizing the concours judging. Finally, we would like to thank all of the prize contributors for making our race a success. As our proceeds from the raffle and the entries go to Lambs Farm, it really helps to receive generous donations from the following manufacturers:

Continued on page 50



This battlers model of the DKM Lutzow has just been sunk! Don't worry about the BB holes in the hull, they were all given permanent repairs in just a few minutes time.

Have You

Taken any good SALVOS lately?

Discover the exciting new sport/hobby of RADIO CONTROLLED MODEL WARSHIP COMBAT, where your 1/144 scale model warship will battle other warships for control of the sea. Each model is armed with low power BB cannons that you control by radio to shoot holes in the soft skin of your opponents hull. If you show superior gunnery skill, you may even manage to sink the enemy, but BEWARE!, he is trying his best to sink YOU!!!

These models do not suffer any permanent damage from this seemingly destructive treatment. A warship model may battle and be repaired many times in a day, even if it gets sunk.

Whether you just battle in one on one engagements or as a member of a large fleet that is taking on another fleet, RADIO CONTROLLED WARSHIP COMBAT will give you a rush and thrill that cannot be matched by any other radio controlled model sport.

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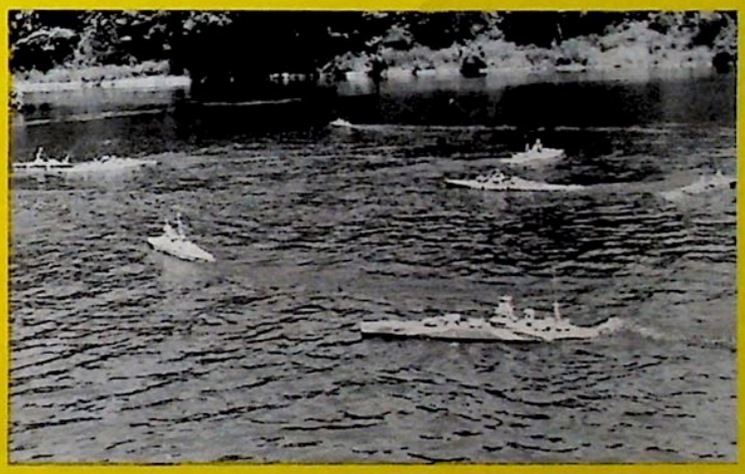
We also offer A.R.F.s (Almost Ready to Fight), hardware parts & accessories, ship model carry cases, and our new custom built A.R.F. service, where you can get any ship you want built for R/C combat.

Available Sept. 1, 1989 will be exciting videotapes of recent R/C warship combat contests. These tapes (available in VHS only) will have warship model closeups, interviews with battlers, and lots of combat footage of ships exchanging BB salvos. These tapes will be available for rent or purchase.



The battle rages. Ships of the Allied and Axis fleets try to drive each other beneath the waves in order to secure control of the sea.

PLEASE WRITE TODAY for our new catalog of model warship kits, A.R.F.s, supplies, accessories, & videotapes and an information package on the new hobby/sport of RADIO CONTROLLED MODEL WARSHIP COMBAT. This info pack describes the ships, the battling, the history, and the organizations that currently exist to promote this most exciting of R/C hobbies that is sweeping the country. Just send $1.00 and a legal size Self Addressed Stamped Envelope to the address below.

To receive a copy of the construction and battling rules from the INTERNATIONAL ASSOCIATION OF MODEL WARSHIP COMBATANTS please include another $1.50

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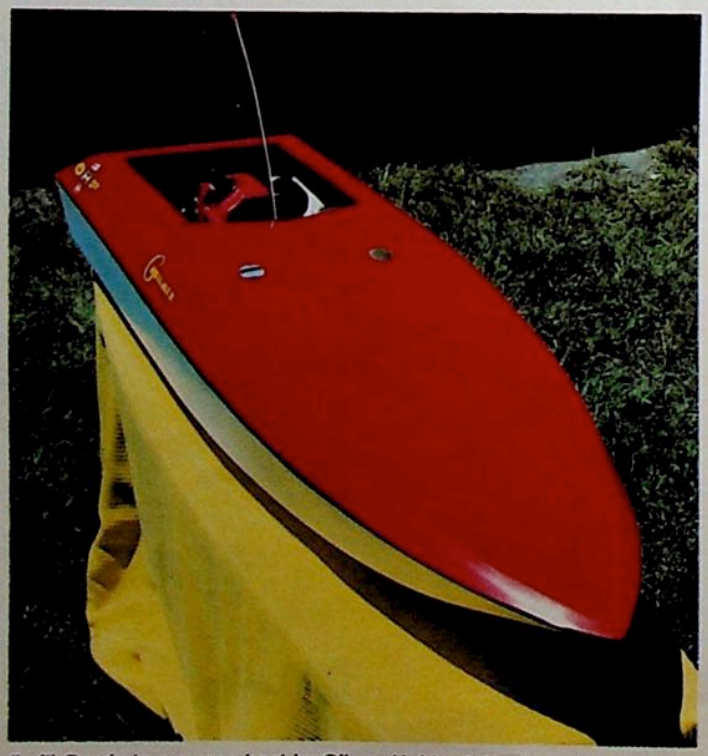
The MRP "Outrageous Drag Boat."

International Hobbies, Inc., 1505 Timberline Rd., Fort Collins, Colorado 80524, has announced a new boat model. It's a fifty-inch long scale version of the Popeyes® off-shore racing catamaran. It features a 33 cc, pull-start, chainsaw-type engine, centrifugal clutch, and a 25 percent overdrive gear train. The hull is resin injected fiberglass, and the kit includes a full, detailed decal set. It is available as a basic boat, a complete kit, or ready to run. For further information, write to International Hobbies, or call 303-221-3110.

* * *

The 3.5 outboard powered Evader Hydro by Graphics Biz comes as a kit. The hull is made of ABS plastic and assembles in about one hour. Length is 26 inches and the beam is 15-1/2 inches at the sponsons. With a large radio compartment, it's easy to install most any make of radio gear. All that is needed in addition to the kit is a radio, 3.5 outboard, and appropriate motor mount. The Evader is said to be



(Left) Ready-to-run race boat by Glimer Hobby & Machine, Inc. (Right) Engine compartment, showing 20cc Kawasaki engine.

Fifty-inch long Popeyes® offshore racing catamaran from International Hobbies, Inc.

a fast moving boat just as it comes from the kit, and with slight modifications by the builder, can be highly competitive in the 3.5 outboard class. Graphics Biz is located at 9 Farview Ave., Danbury, Connecticut 06810, phone 203-792-6184.

* * *

How about an outrageous drag boat? It so happens that MRP (Model Racing Products, Inc.), 18676 142nd Ave. N.E., Woodinville, Washington 98072, is now offering just that, the "Outrageous Drag Boat!" It's a flat-bottom, "K" Class racing unlimited, powered by two 6-volt NiCd battery packs driving a special wind 05 electric motor which is equipped with a water cooling coil and heat sink motor mount to extend its life. Spin fins and adjustable ride plates provide needed trim controls for various water conditions.

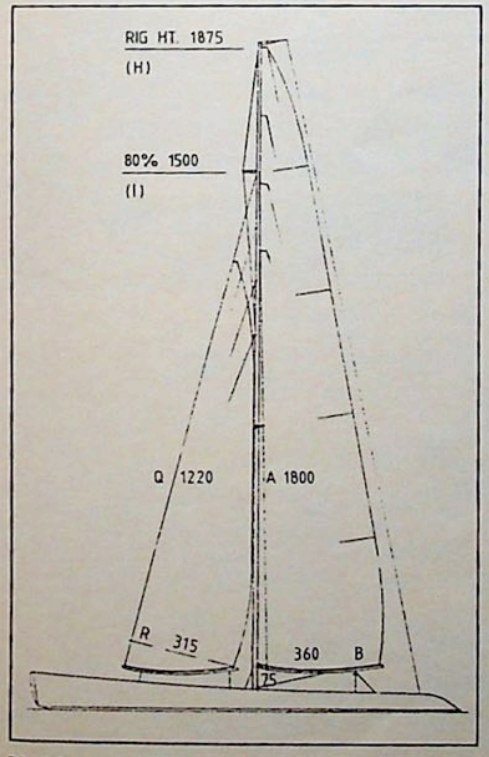
The Outrageous is offered as ready-to-run, with two-channel pistol grip radio, and only requiring the application of decals. A Deluxe version provides a joined deck and hull, along with the micro-switch high amp speed control, and the Basic kit offers you an unassembled boat, less electrics.

Staubitz of Buffalo Coast Guard Point-Class Cutter, from Dynamic Model Products.

* * *

Although radio controlled model sailboats have been around for more than 20 years, it hasn't been until recently that the general modeling public has "discovered" the fascination of water sailing. Sure, they don't go a "100 miles-an-hour" and they don't make any racing noises, but in a regatta, with other boats in the same class of length and sail area, and everyone subjected to the exact same weather and water conditions, it's surprising how much low-speed excitement can develop!

Responsibility for this new growth of interest in R/C sailboating can be credited to several manufacturers who are offering ARF sailboats (We could have said Almost Ready to Sail, but chickened out!) as part of their



Marblehead Class "Cloudburst," drawings from Taubman Plans Service.

Evader 3.5 outboard powered hydro from Graphics Biz.

product lines. The latest to join this group is Robbe Model Sport. Robbe already offers several sailing yachts that are more difficult and time-consuming to build, so they're not new to the game. However, the latest model in their line, the "Comtesse," fills the need for an easy starter in R/C sailboating.

The kit features a molded Plura hull (a Robbe trademark), ready-to-install molded rudder, pre-sewn sails, aluminum mast and booms, and molded cockpit. Also included is a fitting set with railing stanchions, railings, bow and stern rail components, spinnaker booms, steering wheel with stand, life belts, compass, winches, and cleats. Because of the prefabrication, Comtesse can be built in one weekend, and rigging for any sailing session only takes a few minutes. A two-channel radio with sail servo is required.

The Comtesse is 37-1/2 inches L.O.A., height is 59 inches, beam is 9 inches, and the weight (displacement) is seven pounds. For more information, contact Robbe in the USA at 180 Township Line Road, Belle Mead, New Jersey 08502, phone 201-359-2115.

* * *

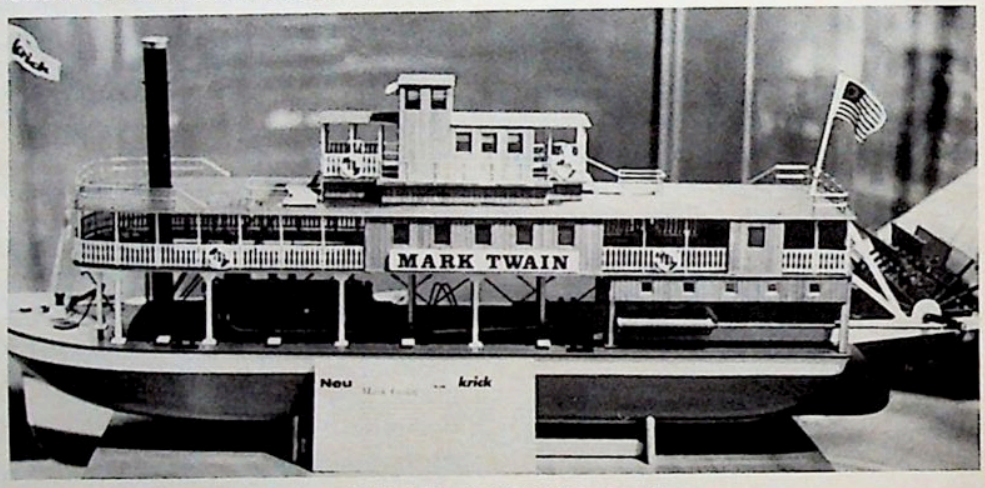
Taubman Plans Service, 11 College Drive, Box 4G, Jersey City, NJ 07305, "The Department Store for Plans & Books," has added another Adrian Brewer R/C sailing yacht design to its list of racing sailboats. This one is named the "Cloudburst," and is for the International Marblehead Class. Like the others in this series, the drawing consists of all the required full size hull lines and sections, along with sail plans for a working rig and a high rig, plus a dimension table for three smaller suits. L.O.A. is 50.75 inches, L.W.L. is 48 inches, beam is 9.65 inches, and displacement is 14 pounds. Not intended for rain puddle sailing, the draft is 18 inches! Write to Abe Taubman, or call 201-435-5205 for further information.

* * *

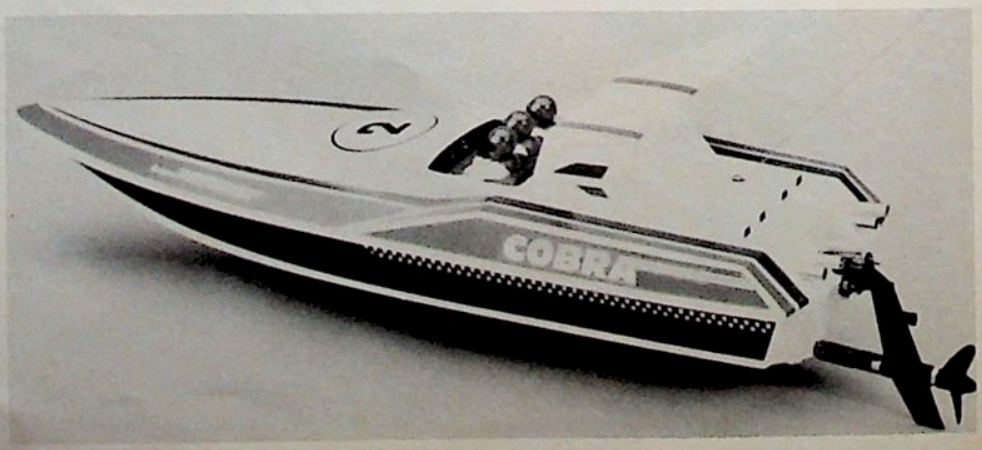
Gilmer Hobby & Machine, Inc., builder of a fine performing quarter-scale midget R/C race car, has incorporated its mechanical and racing knowledge into the production of a gas powered boat. The hand-laid fiberglass hull is custom manufactured by Jomarine, of Hibbing, Minnesota, and measures 45 inches long, with a beam of 14 inches. The top deck is available in a variety of colors which can be requested from the factory. Power is a 20 cc, industrial Kawasaki engine, with centrifugal clutch and recoil starter. The air-cooled engine runs on

The electric powered "Stinger" by Great Planes Model Mfg. Co.

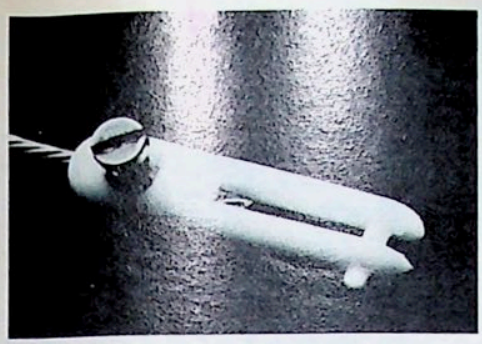
Steamboat era scale crew from Hobby Lobby.



Hobby Lobby/Krick steam powered "Mark Twain," 40-1/4 inches long.



Ready-to-run electric powered "Cobra" from Hobby Lobby.



Security Clamp Clevis, from Hobby Lobby.

pump gas and oil, and is coupled to a stern drive unit.

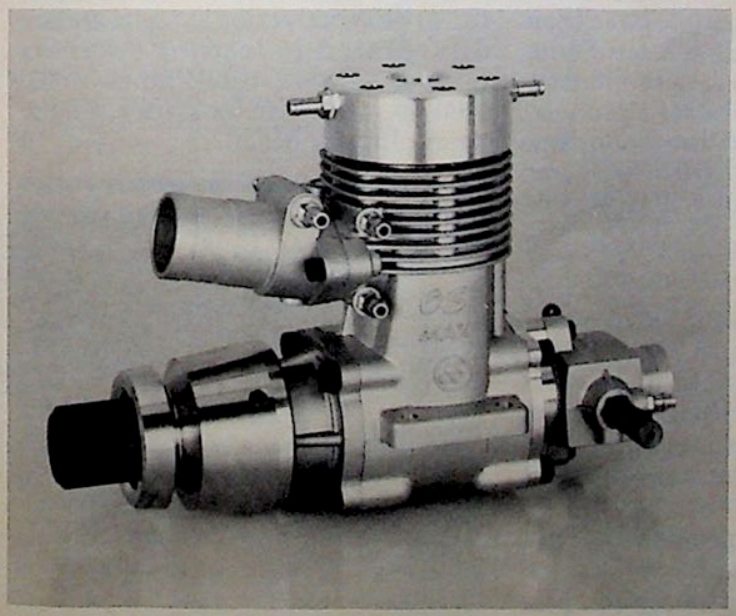
The Gilmer Hobby & Machine boat comes totally assembled and ready to run, with the option of a radio package. The radio package consists of a Futaba 3PG PCM transmitter and receiver, S134 servos (112-ounce torque, for steering and throttle), 1200 mAH battery, antenna, and switch. A watertight radio compartment is provided whether or not the radio is ordered with the boat.

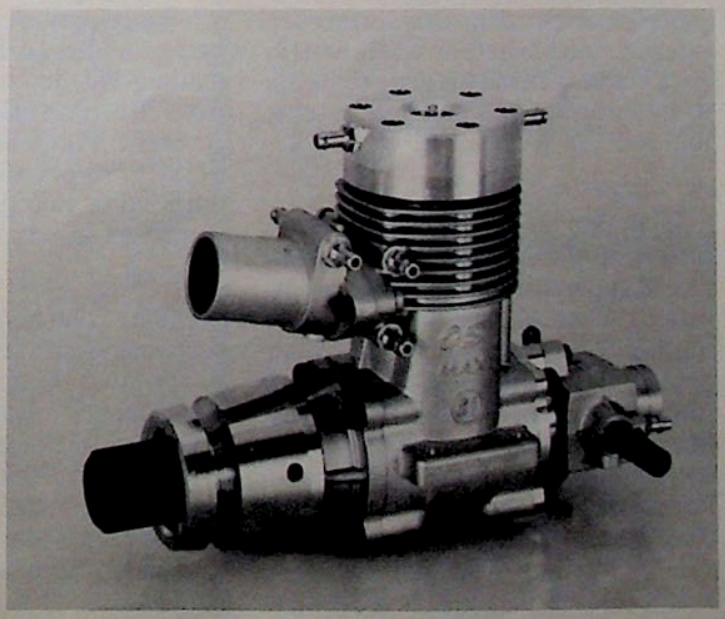
Top speed of the Gilmer boat is said to be an honest 30 mph with an Octura X460, two-blade prop. An X460 three-blade prop, available from the factory, will increase this performance. Price of the boat without radio package is $930., and with radio is $1350. For further information, contact Gilmer Hobby & Machine, Inc., 1213 Fourth Ave., Howard Lake, Minnesota 55349.

* * *

Great Planes Model Mfg. Co., P.O. Box 788, Urbana, Illinois 61801, has opened a new division, GP Marine, and with this, announces the "Stinger" 05 electric powered race boat. This pre-assembled boat comes with its "Twinline Drive System" already installed, including two 550-size motors mounted end-to-end (inline) and coupled directly to the driveshaft. A

The "Comtess" sailing yacht by Robbe Model Sport.





O.S. .65 (left) and .81 (right) VR-M engines (also a .61) for marine use, from Great Planes Model Distributors.

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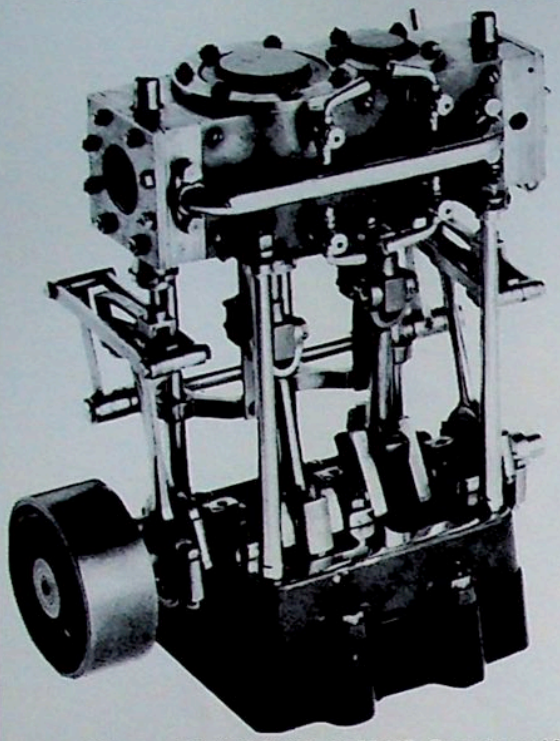

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two speed forward/one speed reverse speed control allows realistic operation, with speeds up to 20 mph using two 7-cell battery packs. Included with the fully assembled ABS boat hull are all fittings and hardware, plus a fully-illustrated, step-by-step instruction manual with over 40 photos, permitting even first-time builders to finish up the radio installation in about an hour. Full-color decals provide the finishing touch.

The Stinger requires a two-channel wheel or stick radio on a surface frequency, plus two 6 or 7-cell battery packs and a fast charger. Write for more information and a free catalog, and tell 'em we sent ya.

* * *

Dynamic Model Products is announcing the introduction of its new line of super-scale R/C fiberglass boat kits . . . The Master Series . . . The Master Series will contain high quality U.S. Navy and U.S. Coast Guard fiberglass hulls and semi-kits. This line will include the kits Dynamic recently purchased from the well-known Staubitz of Buffalo. The first release will include the famous 1/32 (3/8" = 1') scale WWII Subchaser, a 1/48 (3/4" = 1') scale 205' ATF Fleet Tug, and the classic 1/24 (1/2" = 1') scale 82' USCG Point-Class Cutter.

The three above-mentioned kits (which include hulls and superstructures, and full-size plans drawn by Coastal Forces) will be available in early September. Dynamic will follow up this release with its line of 1/72-scale USN Warships, which will include, among others, the Fletcher-Class Destroyer and the LST-Landing Ship Tank. Because of a large number of requests for these first three kits, the company recommends that interested modelers write in to have their names added to the Master Series mailing list, for up-to-date information. Contact Dynamic Models, Drawer C, Port Jefferson Station, New York 11776, or call 516-928-8200, and tell Rich or Bob that *USB&SM* told you to get in touch.

* * *

Hobby Lobby now offers the 40-1/4 inch long Krick "Mark Twain" long-piston River Steamer, the world's first steam model to directly drive the stern wheel from the pistons. The RPM range is 20 to 200. The complete steam engine is included.

Every scale boat model should have a crew on board, unless they're on shore leave, in which case the boat should not be running! Hobby Lobby's answer to this is a set of four crew figures; the captain, a helmsman, a fireman, and a boatman. All stand about 5-1/2 inches high, and are appropriately dressed to be on board the Hobby Lobby/Krick steamers "Patricia" and "Victoria." Obviously they are also available for any other boat of the same vintage and about 1" = 1' scale.

The "Cobra," 23-1/2 inches long, is a new complete and ready-to-run electric powered boat from Hobby Lobby. All it needs is NiCd batteries and a radio. The only choice on this "water hotrod" is whether you want it in red, yellow, or green!

Hobby Lobby also offers a new, short (only one inch long) clevis which clamps directly to the pushrod. The "Security Clamp Clevis" holds securely because the screw clamp is solid brass. Great for tight installations.

All of the above items are available from Hobby Lobby, and listed in its new catalog, number 14, which is FREE! Just call or write and ask for it, and be sure to tell 'em you read about it in *USB&SM* . . . that's us! Hobby Lobby is at 5614 Franklin Pike Circle, Brentwood, TN 37027, phone 615-373-1444.

* * *

O.S. Engines has just released three new marine engines. They are VR-M ABC engines in sizes .61, .65, and .81 cu. in. The .61 weighs 28 ounces and produces 2.8 BHP/22,000 rpm, with a speed range of 2,500 to 25,000. The .65 weighs 28.2 ounces and produces 3.0 BHP/22,000 rpm, with a speed range of 2,500 to 25,000. The .81, which replaces the 77 VR-M ABC, weighs 29.6 ounces and produces 4.2 BHP at 22,000 rpm, with a speed range of 2,500 to 25,000. All three engines feature a new drum valve induction system, and are distributed to leading retailers nationwide by Great Planes Model Distributors, P.O. Box 4021, Champaign, Illinois 61820. •

Spangler . . . . . *Continued from page 44*

Airtronics, Ait Age Publications, Al Tech, Al's Hobby Shop, America's Hobby Center, Astro Flight, Avenger Boats, Badger, Bob Smith Industries, Carstens, Coverite, Cox Manufacturing, Dubro, Dumas Products, Ernst Engineering, Floquil, Futaba, G&M Models, Goldberg Models, Great Planes, Hobby Lobby, Honeywell, Horizons, Hunt, Leisure Products, Lindberg, McCoy, Midwest, MRC, Octura Models, Paasche, Pactra, Parma, Pettit Paint Co., RAM, R/C

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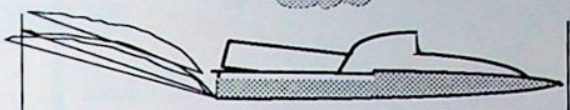

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2. Glen Imm[illegible]
3. Fred Har[illegible]

R/C Boats ... *Continued fr[illegible] page 21*

watercooling system is being redone.

There's probably a couple of lessons to be learned from all the problems and frustrations we've been experiencing with our "Executone." The first seems to be: "Don't count your chickens before they hatch." I really thought we'd be able "to sort things out" much quicker. I usually have a tunnel, or Sport 40 "dialed in" after just one trip to the pond. Such has not been the case with our R/C Unlimited boat. But I'm committed to the following lesson, "if you don't succeed at first, try, try again." With a lot of help from my friends, this boat is going to be a winner.

The "best of times" side of my model boating endeavors during the first half of 1989 has been the development of a fast, electric outboard tunnel. Over the past few years, I've dabbled in fast electric. The Dunlap 05 Ski Cruiser has been around for a few years and the plans are available through the magazine.

Working again with David Frank, I combined some of the things I've learned about model tunnel boats with a high performance electric outboard. What high performance electric outboard, you might ask? Well, that's where David came to my assistance. He created an electric outboard by adapting a 05 motor to the existing K&B 3.5 lower unit as a prototype.

After building three different size tunnel boats, it seemed like a 24 inch tunnel with sponsons wider and flatter than I use on a 3.5cc outboard tunnel worked best. The boats were built as light as possible, as weight is a speed killer when dealing with electric power. I tried a smaller size tunnel and it worked well at speed. The only problem was when it stopped, the weight of two 6-cell packs caused the boat to sink at the transom submerging the motor.

The two 6-cell battery packs are connected to provide a 12-cell power source. Using a geared drive system and stock 05 motors, the performance is really good when compared to other electric boats now available. The advantages of using the K&B 3.5 lower unit for our prototype is that it allowed trying existing props. Using the geared system, it was possible to run props like the Octura X-438 and X-637.

In early April, I took my fast electric outboard tunnel to Tucson, Arizona, to show Jay and Rob Brandon, of Dumas Boats. Dumas currently kits

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three of my tunnel designs for gas motors. Did you know 6-cell battery packs look just like dynamite sticks when X-rayed at the airport security?

The little electric tunnel showed what it could do at the Tucson Model Boat Pond. My demonstration went even better than I could have imagined. Jay and Rod were sufficiently impressed to adopt the concepts as future Dumas Boats products.

The key to this model concept is the high performance electric outboard. Dumas Boats plans to produce a high performance, electric outboard unit. The production unit will feature either gears or belts for the reduction system. The drive system will probably use a cable drive because of ease of operation and maintenance. The high performance electric outboard will be available as a separate item and could be used in many electric boat applications. Because 05 motors have a standard bolt pattern for attaching them to the cars or boats, it will be possible to use any of the 05 motors currently available for cars.

The tunnel boat will be made from ABS plastic. This will allow the weight to be kept to a minimum as well as allow the boat to be Almost Ready to Float. The boat will feature scale appearance. The radio box will be built into the hull.

Rob Brandon, president of Dumas Products, told me they would like to have the boat and motor available by late Fall of 1989. I think this type of fast electric could create a whole new electric boat racing class. The availability of a high performance electric outboard definitely opens up some interesting possibilities. There's no doubt a tremendous amount of technology developed by the folks in electric cars is applicable to fast electric.

POSTSCRIPT

Two weeks after mailing off my article for the Fall Issue, we had our third opportunity to race the "Executone" in an R/C Unlimited event. The race site was Elma, Washington, a small community located between Olympia and Aberdeen, in the coastal hills.

When Paul and I left Tacoma at 6:30 a.m. that Sunday morning, the sun was out and it appeared like it was going to be a really nice day. The day before had seen record setting temperatures in the nineties. However, as we neared Elma, clouds blocked out the sun and a strong wind was bending the trees as we drove towards the race.

The wind blew all day, down the length of the race course creating extremely difficult racing conditions. The wind, coupled with rollers, caused some spectacular flips. During the open water practice time prior to the start of racing activities, we experienced a variety of problems from blown water lines to a loose carb. After about four practice runs, it seemed like everything was holding together.

In our first heat, Paul blew the "Executone" over while running in second place. This caused some amount of tension between driver (Paul) and boat owner (me) as I kept telling him to get out of the throttle or he'd dump the boat. Paul said he couldn't drive the boat any slower because the throttle response was sluggish and he was afraid of killing the engine.

Prior to the second heat, the engine was richened and the throttle linkage reworked to insure better response. Twelve ounces of lead were also attached to the front of the boat to help keep the bow down. These changes proved helpful, as Paul took first place finishes in heats two and three and qualified for the First Consolation Heat.

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Winner of the First Consolation would advance into the Final heat. Our strategy was to get the inside position at the start and then try to hold on. Well, Paul managed to gain an inside position, but another boat managed to gain the inside in front of him. In the first turn, Paul pulled even with the other boat and for the remaining five laps the two boats ran almost deck to deck in very rough water. After five laps, Paul was about a boat length behind at the finish. It was definitely the most exciting race of the day and we felt good about our efforts even if we didn't win.

It's beginning to look like all the time and effort is beginning to show some results. And there's another cliche that goes, "The third time's the charm." •

Woodbending. . .*Continued from page 31*

size what happens when wood is bent after being treated in a solution of ammonia and water. The lignin is plasticized by the alkalinity and the cells rearrange themselves in response to the internal stresses set up within the wood by the bending loads. As the piece dries, the ammonia goes out of solution, the water evaporates, the lignin regains its adhesive properties and the wood is locked in it bent position.

RESULTS

While all investigators report that best results are obtained when wood to be bent is treated with liquified ammonia and superheated steam in specialized retorts, such equipment is far too costly and dangerous for the home workshop. To avoid these practical difficulties, a concentrated solution of ammonia in water, called aqua-ammonia, was obtained in ordinary gallon bottles from a local chemical supply house. A small amount of the solution was poured into an 8-inch test tube and stoppered to prevent escape of the pungent fumes. To avoid spills, the tube was held upright in a Mason jar positioned before an open window to let the fumes escape as work progressed.

Several test pieces of alder wood, 6 inches long, 1/4-inch wide, and 1/8-inch thick, were inserted into the tube and soaked for 15, 30, and 60 minutes. Even after the shortest soaking, the wood had taken on a very waterlogged appearance. The pieces were very pliable, had the general texture of wet leather, and could easily be bent with the fingers. It was not difficult to wrap them spirally around a wooden cylinder 3-1/2 inches in diameter and to hold them in position with ordinary pins. When dry and unpinned, the bent strips sprung away from the cylinder less than 1/16 inch. This is a highly significant achievement not attainable either by steaming or cold soaking methods. The dry wood was slightly grayer than an untreated strip, and the grain was somewhat raised. The bent pieces could be sanded, drilled, cut, glued, and painted as readily as virgin pieces.

To check for a possible loss in strength, two identical pieces, one untreated and the other soaked for 60 minutes and then dried straight, were clamped in a vise and their ends loaded with equal weights. Each bent down the same amount and, when unloaded, returned to their original straight shape. From this, it may be concluded that there is no significant loss in bending strength due to the ammonia bath.

It was found that if the test pieces were soaked longer than 60 minutes, they became somewhat more difficult to form than those soaked for a shorter period. When bent around cylinders less than 2 inches in diameter, fibers on the inside of the bend failed in compression, probably due to column failure by the individual cellulose cells.

After a dozen or so strips of alder had been soaked, the solution in the tube remained transparent but had a reddish cast resembling strong tea. Whether this was caused by dye extracted from the wood or lignin dissolved by the aqua-ammonia is not known.

Other types of wood usually used by the model shipbuilder, such as pine, holly, mahogany, and boxwood were subjected to similar tests. Results were similar to those described above.

Following the success of these initial tests, all of the individual planks representing the main wales of a 1/4-inch-to-the-foot model of an English 6th rate warship were cut, plasticized in aqua-ammonia, formed directly over the frames and held in position until dry, using ordinary household pine.

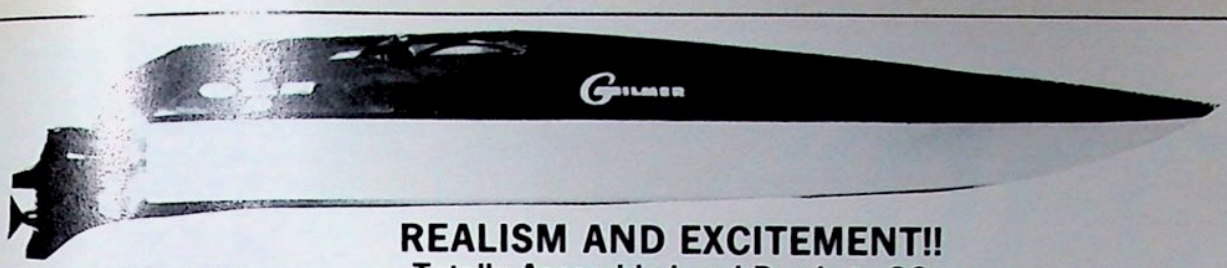
A layer of paper was inserted between plank and frame to prevent possible staining. When dry, each plank was removed, sanded, trimmed, and fastened in position with glue and treenails. For this and similar applications, results were obtained that could not have been achieved by any other wood bending techniques.

CONCLUSIONS

1) Aqua-ammonia, a saturated solution of ammonia in water, can be used at room temperatures under home workshop conditions to bend wood more easily and with better results than can be attained using more conventional methods.

2) The ammonia solution causes the wood to undergo a temporary plasticization that renders it pliable and capable of being bent into shapes not attainable by steam or heat bending. When the workpiece is held in the bent position until dry, there is no appreciable loss of strength and little springback to original shape.

3) Aqua-ammonia is readily ob-



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tainable in ordinary glass bottles from chemical supply houses at low cost. It can be used safely if work is performed in a well-ventilated area, if pieces are handled as little as necessary, and if hands are rinsed thoroughly after exposure.

REFERENCES

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4) Schuerch, Conrad., *WOOD PLASTICIZATION,* pp 377-81, Forest Products Journal. Vol. XIV, Sept. 1964.

5) Davidson, R.W. and Baumgardt, W.G., *PLASTICIZATION OF WOOD WITH AMMONIA; A PROGRESS REPORT,* pp 19-24, Forest Products Journal. Vol. XX, No. 3, Mar. 1970.

6) *AMMONIA, PHYSICAL & CHEMICAL PROPERTIES,* Handbook of the Matheson Company, 1965. •

PUFF ..... *Continued from page 28*

him an arm on the outside bottom of the fuselage to attach a rod or flex cable to his water rudder(s).

The bow and stern chocks for dock-lines and towing were cast in epoxy. Carve a right hand and left hand pattern, and with a drop of Hot Stuff, cement them a 1/4 inch apart to a sheet of Cutrite wax paper. They will not cement well, but won't move around. With some vaseline, grease the patterns. Now, build a box around them with 1/8 or 1/4 by 1/2 scrap, leaving 1/4 inch clearance around the patterns. With hardware-store variety silicone caulking, fill up the box, covering the patterns. After a 24-hour cure, remove the wax paper, wooden forms, and the patterns. Mix up some 5-Minute Epoxy and fill the voids left by the removal of the patterns. When cured, remove the castings, drill for the screws, and paint the chocks with gold Pactra Enamel. Screw them onto the deck where indicated.

The hull is constructed inverted. Build the frames with the sides extended as shown. Build the bow and stern transoms and the keel assembly. When the keel is completed, lay it on the plan and draw on it the one-inch wide, hardwood shaft log (any wood harder than balsa is satisfactory). Fit the 1/2x1 shaft log and drill a 1/4-inch hole along the shaft centerline with a long, 1/4-inch drill. An alternate method is to build up the shaft log from two pieces of 1/4x1. Mark the center line and cut a groove about 1/8 inch deep. Cement the log together with epoxy and drill the 1/4-inch hole, using the groove as a pilot. When the hull is completed, select tubing with a slide fit on your propeller shaft, and cement this tube into the 1/4-inch tube for a bearing. On this bearing tube, it is a good idea to soft solder a piece of tubing to act as an oil reservoir to lubricate the shaft.

On this, or any boat with a propeller shaft, it is a good idea to oil and turn the shaft by hand occasionally. Once the boat has been run in water, the water in the bearing will corrode the steel shaft. Occasional shaft movement will lubricate this interface and prevent a corrosion problem. An occasional short run on compressed air is even more effective. Even an air-brush compressor will do the trick!

When you are ready to start assembly, cement a spreader bar 1/4 square, or 1/4x1/2, across the frame extensions, marking the center on each. Center, square, and plumb, all the frames in an inverted position on the construction drawing over a "building board." Secure these frames well. Cement the bow and stern transoms on the keel assembly. Install, and cement into place, the keel assembly and transoms. Make a side pattern out of poster board. It should fit both sides, but if it doesn't quite fit, make two patterns. When satisfied, cut the sides from 3/32 plywood and cement them in place. It is satisfactory to splice the plywood with a back-up piece. Make the splice at the ends, however.

You may now fit the bottom pieces of 3/32 ply. With the ply bottom and sides installed, the hull may be removed from the building board and the frame extensions sawed off with a fine Exacto saw. Build up the timbers that hold the cockpit coaming. Fitting the 3/32 ply deck completes the basic hull.

The hull and deck is fiberglassed with a good epoxy resin and from 2 to 6 ounce glass, the weight is not too significant, although the lighter is perhaps easier to "fill." I highly recommend, however, E-POX-E Finishing resin, marketed by Loctite Corporation. It is a safe and odorless equal mix resin/catalyst epoxy, which is not at all critical to mix! It is colorless and flexible, although it has excellent sanding properties. It makes an excellent foundation for conventional fillers and enamels. Try it . . . you will find it terrific!

Even if you are a fiberglass expert, I suggest you obtain the video marketed by John Sullivan Floatplane Products, titled: "Float Flying, the Video." It has a very good description of fiberglassing a float (same as a hull!) in between discussing float design and flat plane flying. He demonstrates some techniques in glassing that are "Neat 'n New!"

Spray the hull bottom with a spray adhesive, an excellent example being Touch & Stick, and then lay down the

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glass a little oversize, smoothing out the wrinkles. Apply a good filler coat of E-POX-E and allow to cure about four hours before trimming off flush with the chine. DON'T overlap. Repeat with the sides. Repeat with the deck. Of course, mix only enough E-POX-E to use for each operation. Sand lightly with 320 grit paper and give the bottom, sides and deck another coat. After 24 hours, sand, and prime.

This is a good time to build a nice hardwood stand or base. It will make a sturdy holder for PUFF while building, and an excellent display stand for the completed model. Build it to fit between Frames 2 and 6, and the match to the bottom will be made easier.

Make a height gauge as shown in the photo and "strike" the waterline. Spray, or brush the hull topside color, allow to dry. Mask the top of the boottop, then paint the boot color. Be sure to run it past the point where the bottom paint will go, with special attention to that area under the stern. Rig your gauge again and strike the bottom of the boottop. Mask and paint the bottom.

Build the cockpit staving of 1/4x1 balsa. This represents 1x4 tongue-and-groove on the 16 footer! Bevel each piece on both sides before cementing in place. Stain mahogany and varnish. Build the seats and finish. The stanchion supports are 1/4 + ID brass tubing one inch long. Each has two brass 4-40 nuts soldered a half-inch between centers. These are screwed to the coaming with 3/8" 4-40 RHMS through a 3/8"x1" plate of 1/16 ply on the inside of the coaming. Install these parts in conjunction with the building of the canopy support for a "happy marriage."

There is nothing new and exotic about building PUFF. Anyone with a knowledge of woodworking tools and techniques, and who has built wooden ship models, will find building it a lark. It is large enough to take it out of the intricate and difficult-to-build class. It is possible to take this vessel to any extreme of scale realism desired, such as cushions, cabinet doors under the seats, gratings, music or conversation, passengers . . . whatever you can think of. Please send us pictures of your version of PUFF. Too, any boat builder of any ability can build a 16 or 20 footer from the Lines and Elevation drawings. If someone "beats me to the draw" on such a venture, please keep us posted!

As shown in the illustrations, the Saito T3DR was able to power PUFF in a satisfactory manner for the favorable wind conditions. I would recommend the Saito T2GR or the Stuart D-10 for performance similar to full-scale, however. This, of course, would also require a larger boiler. PUFF can carry a LOT more weight, so don't fret about it!

That's about it. Until we are in port together again, we wish you fair winds and a clear star to steer by.

REFERENCED SOURCES

ACE R/C, 116 West 19th Street, P.O.B. 51112, Higginsville, Missouri 64037

CONVENIENCE PRODUCTS, INC. (Touch 'n Stick Construction Adhesive), 866 Horan Ave., Fenton, Missouri 63026

DAVIS DIESEL DEVELOPMENT CO., P.O.B. 141, Milford, Connecticut 06460

DU-BRO PRODUCTS, INC., 480 Bonner Road, Wauconda, Illinois 60084-1198

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JOHN SULLIVAN, FLOAT PRODUCTS, 1421 2nd Street, Calistoga, California 94515

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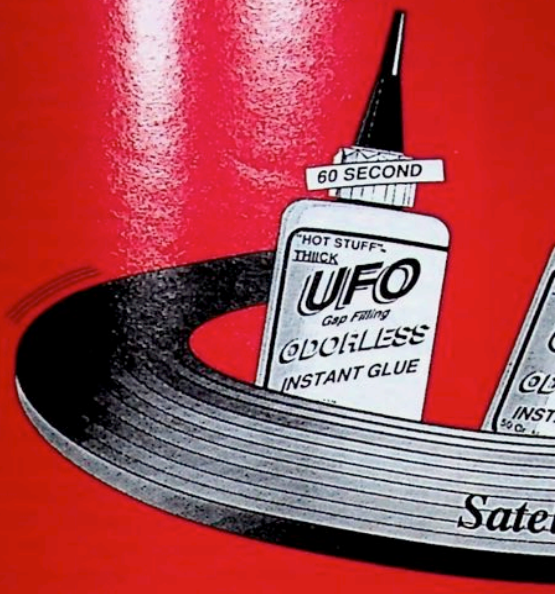
Scuttlebutt . . . *Continued from page 32*

Model building activities for youngsters such as the Delta Dart program are often featured. In recent years, the A.M.A. has offered a transmitter performance check service. The fact that many modelers are gathered even provides an opportunity for meetings of special interest groups.

The main difference in these larger shows has become one of the philosophy of the show's sponsor. In the last few years, the Radio Controlled Hobby Trade Association (R.C.H.T.A.) has sponsored a show in Chicago in November, Pomona in March, and next year a new show in Philadelphia in May. These shows are "non-selling," which means that although products are on display they cannot be purchased at the show. Only orders can be taken for future delivery, which



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may or may not satisfy the anxious customer.

There is great disagreement in the industry about this matter. Many manufacturers are committed to this policy as it is more "professional" and is intended to protect the interests of the local hobby shops. However, it does require that the manufacturers be financially able to cover the cost of the booth, shipping, travel, hotel, food, etc. without any supportive sales at the show.

Since this is an industry of mostly small companies, there are many who cannot afford to only display and not sell. It is pointed out that most sales at selling shows are made because the products are not carried in local hobby shops. It is just as likely that because products are obtained at shows, used by modelers, and then sought after at local hobby shops, the shop owner has had a new market established without any risk or outlay on his part. If he chooses not to sell the products, then the modeler can choose to obtain them through mail order.

It is also true that most of the companies in the R/C hobby industry start out small and the best way to find out if they have a marketable product is to display at an R/C show and see if anyone is willing to part with cash for the new widget. This is also the money that will probably allow the next product to be developed and the company to grow.

Whether you prefer to buy at a show or not, it is to your advantage as a modeler to attend a show. You will have a chance to see what is available from the manufacturers who exhibit and your enthusiasm will get a boost from the models on display.

Most of the established shows are advertised in the model magazines. Some sponsors use mailing lists to contact local clubs. Aggressive hobby shops will display posters and encourage their customers to attend because they know there is always an increase in activity (SALES) after such a show.

Perhaps our esteemed editor might consider adding a column listing dates and locations of all upcoming shows. *(See "Cap'n's Log" for currently available show information. wcn)*

However you find out about them, plan to attend at least one this year. I am sure that you will be glad you did. •

Vacuum Table. . .*Continued from page 12*

supported to prevent deforming by the heavy, wet plaster. Tap the plastic form rapidly and gently to prevent bubbles from forming on the surface of the plug. After removing it from the plastic form, the plaster can be finished with sanding, and detail can be added with tapes and carving.

Four plastics are generally available for vacuum forming. They are, in order of their formability, butyrate, styrene, vinyl, and acetate. Butyrate is fuel proof, somewhat unstable over long periods, hard and clear. Styrene is usually hard to fine, tends to be fragile . . . smells like vomit. Acetate and vinyl are tough, but are susceptible to some fuel ingredients and cleaning solvents. Acetate tends to fog when cooled too quickly or not heated enough; it tends toward brittleness. Vinyl is obnoxious (an unclear description, but if you use it you'll know) and the original dust collector, but is more resilient than the others; it requires lower temperatures.

Smaller objects and pieces of film can be accommodated by adding heavy bond paper edge-to-edge to the smaller plastic sheet. Use masking tape on both sides of the joint, pressing the tape firmly to make a strong connection (Fig. 3). More than one small object can be formed on the table at the same time. Just leave a generous space between each object for clean forming and ease of trimming.

Small parts can be formed from .0075 to .015 film, and larger parts can be formed with .020 to .040 film. Film of up to .050 thickness can be formed, but it is difficult to work with. However, the results can be outstanding on the larger size model. The maximum pull I've attempted with the unit described here is about 3 inches, with a 2x8-inch plug, and .040 film. Experience is, as usual, the best teacher. •

Missile Boat. . .*Continued from page 16*

The computers then direct the Styx to within target acquisition range using the missile's own radar information. When the Styx missile is in range, the infrared homing system takes control for the final guidance phase of the flight. This directs the missile to the heat of the target ship.

The Styx cruise missile flies at about 150 feet above the water. This is so low that it makes the missile virtually impossible to detect with normal shipboard radar, until it is within visual sighting; then it is too late.

Osa/Styx effectiveness has the leading navies of the world worrying about the safety of their huge carriers and other expensive and important ships. Indeed, the Soviet cruise missile/Fast Attack Craft combination

has caused a revolution in the future of naval warfare.

An R/C Osa/Styx construction feature will appear in the Winter '89 issue of *U.S. Boat & Ship Modeler.* This model can even launch a missile! Don't miss it! Happy Boating! •

Shipwright . . . *Continued from page 35*

which Joshua Slocum sailed around the world, single-handedly, in 1892. One of the most intriguing models present was a diminutive Dutch fishing boat of 1896, apple cheeked with leeboardishlike fish's fins, which Rob Napier had crafted in an artful variety of woods.

There were several varieties of tugboat, too; a sprightly harbor tug decked out as a yacht, a dark and powerful coastwise barge hauler, and a world-weary British harbor tug with open bridge, radio-controlled. There being no water handy, all of these models were static displays; for detail and crisp craftsmanship, the radio-controlled models held their own anyway.

Static need not mean lack of action, however. In one diorama style model, a weather-beaten U-boat dove through the steep seas of a North Atlantic storm. In another, the Cunard liner, Saxonia, slipped gracefully through the blue Caribbean; and if in imagination you could become very small, there were schooners sporting with the whitecaps to enjoy, in bottles.

A steady buzz of conversation filled the room, animated, sometimes heated as a point of research was debated. There were many reunions, between modelers who know and respect each other's work, but who still get together only once a year, at the Combined Meeting. The three hours before lunch were hardly enough.

At noon the meeting adjourned to an auditorium cum banquet hall across the corridor, where an ample buffet of hot dishes, salads and sandwich ingredients had something to tempt every palate. With everyone comfortably settled in, the presentations began promptly with announcements about the conference of the Nautical Research Guild August 4-6, the most truly national of model meetings. A new feature: the hotel pool will be available for demonstration of radio-controlled models!

The first speaker was Mike Castagliola, well known and respected as an experienced professional, and a "mainstay" of the Long Island club. He pulled a handful of tricks out of his ditty bag, describing in words and pictures techniques he has developed;

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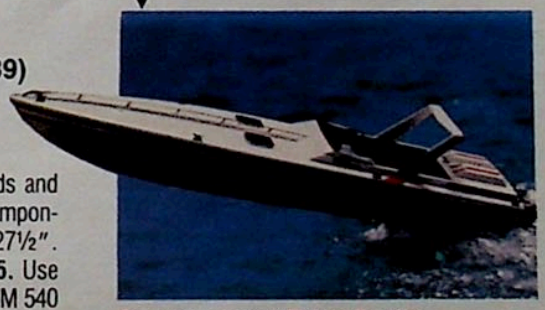

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some demand to be repeated.

Mike spoke of several ways of bending planking stock quickly. His favorite tool is a household iron, passed over the wood with a smooth motion. If the iron's edge is perpendicular to the edge of the wood, a straight curl will result; if the iron is held at an angle, then a spiral will form. Smaller pieces he bends with 40W and 25W soldering irons. He uses cardboard cylinders as male forms, or carves a form to make a progressive radius. With forethought, pre-bent pieces will be close enough to the curve required by the hull shape that they can be pushed into place with little strain.

If the variety of wood he is using tends to splinter, then it can be dampened, but soaking is rarely necessary . . . except in the case of twisting garboards. These Mike hangs in the toilet tank. He has built a series of simple bending jigs, nothing more than a stiff board with a block glued at each end, slotted for the planking stock. The slots are oriented at 90 degrees or more to each other, twisting the plank. Two minutes in the microwave is enough to set the twist, though Mike anticipates a spring-back of about 30 degrees.

Mast hoops he makes in similar fashion, soaking strips of holly and then wrapping them around a dowel of the desired diameter with a shoelace as backing, which maintains tension and prevents breakage. Two minutes in the microwave sets a long spiral which can be cut to quickly become an entire set of hoops. Mike described seven more tricks to improve quality and productivity, all just as ingenious.

Daniel Pariser spoke next, proposing that refinements in naval armament invented by George Hansen late in the eighteenth century profoundly changed the balance of world power. He credited Hansen with recommending replacement of paper wrapping for powder cartridges with flannel, which did not leave a smoldering residue to ignite the next charge. This substitution reduced the time for sponging and worming a gun before reloading.

Hansen also was credited with introducing the priming tube, filled with powder, which could be inserted into the gun's vent hole faster than loose powder could be poured. First tin, then goose quills were the preferred materials for tubes.

The most important of Hansen's labors was adaptation of the flintlock to naval cannon, giving the gun captain better control of the timing of his shot, and thus improving his aim. Pariser described several battle situations in which the superior rate of fire and accuracy of British gunners were decisive against larger French and Spanish forces, using ship-to-ship tactics in defiance of the dogma of the battle line. This explanation for the success of the British Navy provoked a spirited debate in the audience, a worthy accomplishment in itself.

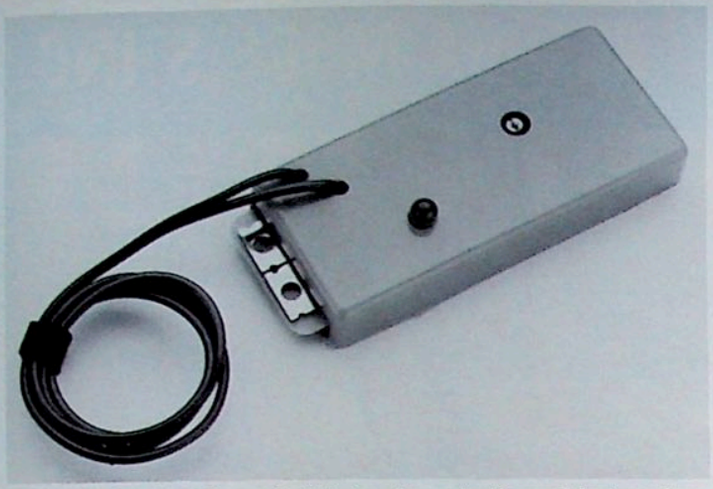
After all this talk of wooden ships and models, Bob Okerholm had several surprises to unveil. Everyone in the audience had been admiring his models of our navy's latest frigates for their precision and thorough detailing; few could have suspected that under that smooth paint was Gatorfoam, a styrofoam board covered with plasticized paper. This makes his models amazingly light for their size, with a low center of gravity for stability in the water.

Bob outlined in detail another secret of his success: he makes his own dry transfer lettering and photoetched parts with a simple contact printing technique sold in kit form by GC Electronics. He took us through the process, step by step, and showed how it could be done at home with normal care and a minimum of equipment. He also casts parts of his models at home, in epoxy, with silicone rubber and vulcanized rubber molds; his example was a well-detailed helicopter fuselage.

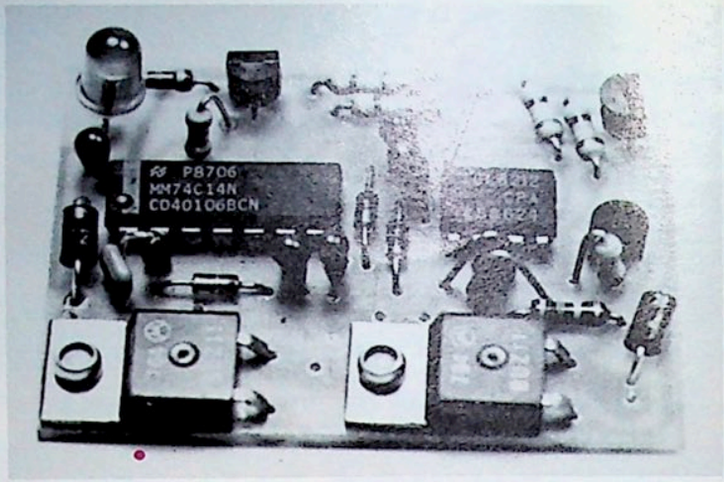
Continuing the pattern of showing how to make the model, and then presenting the historical research which guides the work, Commander Richard Alexander USN (Ret.), the Executive Officer of a succession of diesel and nuclear submarines, spoke about what was clearly his favorite subject. He had made slides of a wealth of shipyard photographs taken during WWII, which showed a Fleet-type diesel submarine from the inside out, including every major piece and assembly. Considering size, range, and firepower, these were the most sophisticated warships of their time, crammed with a bewildering array of gear. A more knowledgeable tour guide would be hard to find.

He also offered tips for identifying the place of manufacture of specific boats, each yard having introduced small variations from the standard design. Boats built at Portsmouth, New Hampshire, carried their anchor on the port side, for example, while the

Continued on page 73



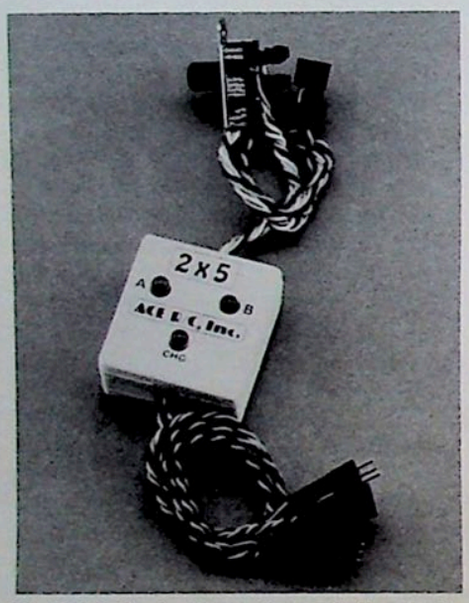
McDaniel R/C Digital Power Switch, handles up to 40 amps! Just requires servo connector for your radio, price $34.95. Ph. (301)721-6303.



Completely solid state, Jomar S2B2 battery backup system. Main and backup packs can be different capacity. $45. Ph. (513)474-0985.

RADIO WAVES

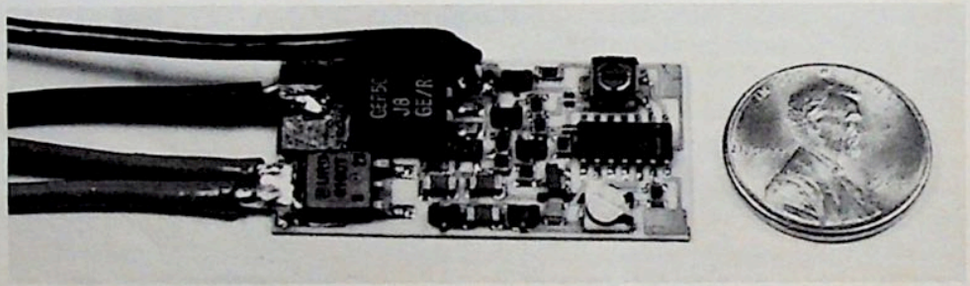
By ELOY MAREZ . . .



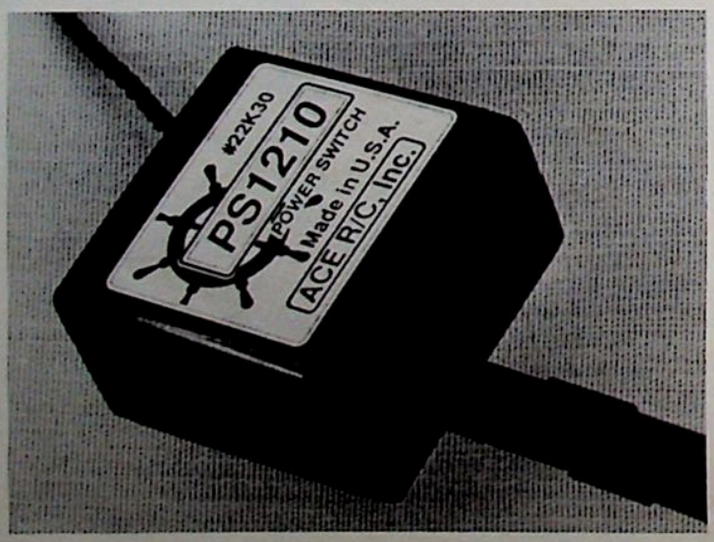
The 2x5 Redundant Power Source (battery back-up system) from Ace R/C, available as kit or built.

Panama has been in the news a lot these past few months, and it is also the site of my casting off this time. However, I do hope that what I have to share with you will be a bit more pleasant than the "pictures at eleven" we've been subject to lately. It is not exactly R/C electronics, my main reason for visiting with you here every issue, but it is R/C boating, an event about which many of us have almost forgotten and most of you have never heard about. It has to do with crossing of the Panama Canal . . . by a model boat.

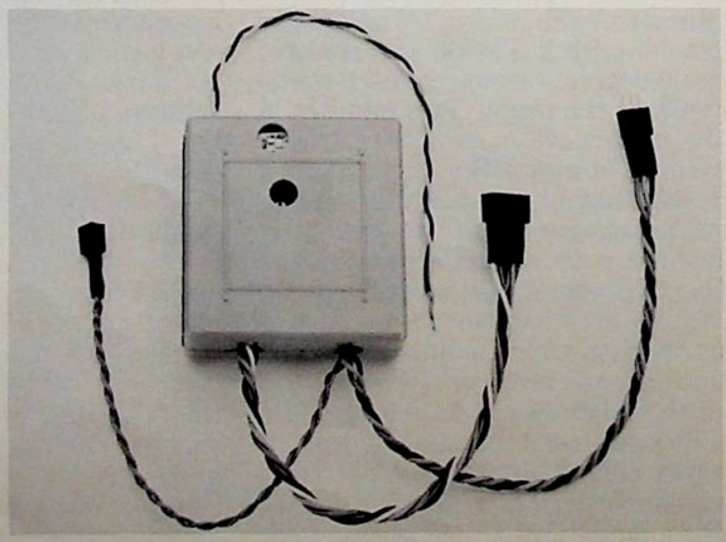
This one-of-a-kind model boat feat took place on May 27, 1970, and was accomplished by a friend of that time, Ken Thomas, then a pilot in the Air Force at Howard Air Force Base, a



Very small electronic switch from Jomar R/C Accessories, 1.5x.8x.3 inches. Handles 10 amps continuous at 12 volts. $35.



The Ace R/C PS1210 solid state switch will handle 2-30 volts, 10 amps continuous, 30 amps intermittent, needs connector for your radio. $19.95.



Digital Light Controller from McDaniel R/C turns on or off, in sequence, all lights, digitally, without micro-switches, per your program.

place you have heard about and seen on your television lately. Ken took his three-foot cabin cruiser through the canal from the Pacific to the Atlantic side, a distance of some fifty miles, in a total time of eight and a half hours. Not too good an average speed, but there is more to it than that.

Ken's model, named the Ancon II, in honor of the very first ship to transit the canal, the Ancon I, went through in exactly the manner as do full size ships. They register, they are given permission, they pay a fee according to their tonnage. The fee for the Ancon II, determined by its 30-pound starting weight, was 72 cents. The 30 pounds included 22 gallons of fuel, of which 2 gallons were consumed during the trip.

Transitting the canal is a complex business, taking as much time for the big ones as it did for the Ancon II. Due to the difference in the levels of the two oceans, and a major difference in the level of the canal waterways, ships first enter locks, in which they are raised in three steps to a higher water level. At the other end, similar locks are used to lower them to ocean level. The little Ancon II, and its chase boat carrying builder/pilot Thomas and two helpers, went through these same locks, and was constantly under the command of the Panama Canal marine traffic controllers. I don't recall the engine, except that it was glow, and I am not too sure of the R/C system, though I seem to recall that Ken had an Orbit or two.

Almost 20 years ago . . . isn't that fantastic? I have since lost track of this Air Force friend, as I have of many others. The last I heard, he was retired somewhere in Alabama. If one of you should happen to meet Panama Canal Pilot Kenneth Thomas, ask him to get in touch.

MORE GEOGRAPHY!

At the time of Ken's canal crossing, I was living in another in-the-news place, El Salvador. No canals, but something aquatic even harder to find, FLOATING ROCKS!

Seriously . . . not too far from the city, there is Lake Ilopango, at one time a volcano crater, now a lake that has no drainage, and is fed only by a rainfall which is extremely heavy during certain parts of the year. Being captive, the water has a very high mineral content, too much to support normal marine life, and is heavier than normal water. Along one edge of the lake there are some cliffs with a high calcium content, of very porous, very light material. The combination of heavy water and light soil is such that any pieces of the cliff that fall off just float along on the surface of the water!

The lake is big, four or five miles long, surrounded by hills, and early in the morning is as calm as a sheet of glass. Might be just the place for that record setting attempt! When you get it organized, you'll need an interpreter. Don't forget me . . . Have Passport, Will Travel. . . .

Enough of the travelogue already, let's get on to some of those fascinating electronic subjects!

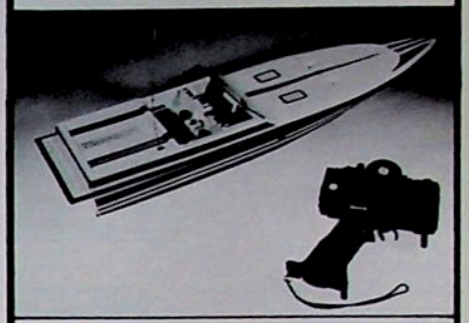
Radio System Accessories is to be the subject for this lap, a brief discussion of some of the add-on items that will make your modeling life easier. Not all of these items will have applications in all types of boats, the old saying about different strokes is most apropos here. But read on, there might be something here that will fit your particular needs. First on the list is the:

Backup Battery, a safety device intended to provide power to the R/C system in the event the primary battery becomes totally discharged or develops a malfunction. A number of these devices are available, and differ slightly one from the other, but they are basically similar. They all include the usual receiver/servo battery pack, from which these components receive their normal operating power. Included also is a secondary battery, usually one of smaller capacity, which under normal conditions is merely going along for the cruise. There is also an electronics package, small and lightweight, which senses the voltage of the main battery and which upon reading a critical voltage, switches the demand of the system over to the backup cells. In normal operation, you will not even know that this switchover has taken place, though most such systems have an indicator, generally an LED, to advise you of the change.

When and where should you consider the use of a battery backup system? Well, any boat which is run for short times and in which every ounce counts is not the best candidate; sometimes you have to decide between risk and short-lived equipment, such as in the case of racing engines for the sake of competitive performance. But if you have to carry any ballast at all, it is certainly better to carry something useful like an additional battery, than a chunk of lead. Similarly, if size and weight are not a primary consideration, the addition of this equipment might save you from a full speed run into the bank or from being stranded with a dead boat out in the middle of

Continued on page 72

Beautiful Boats to Build & Enjoy!



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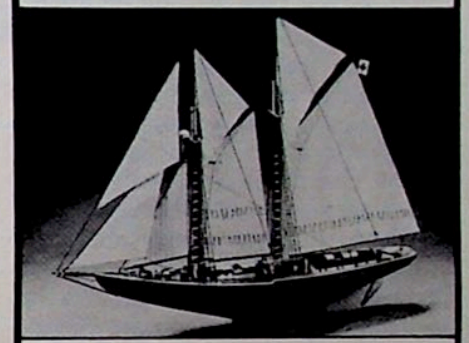

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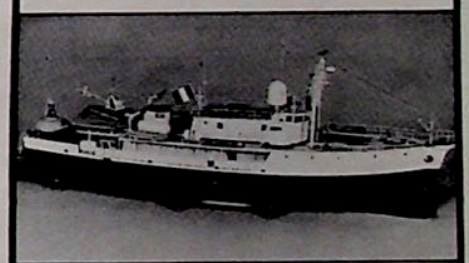

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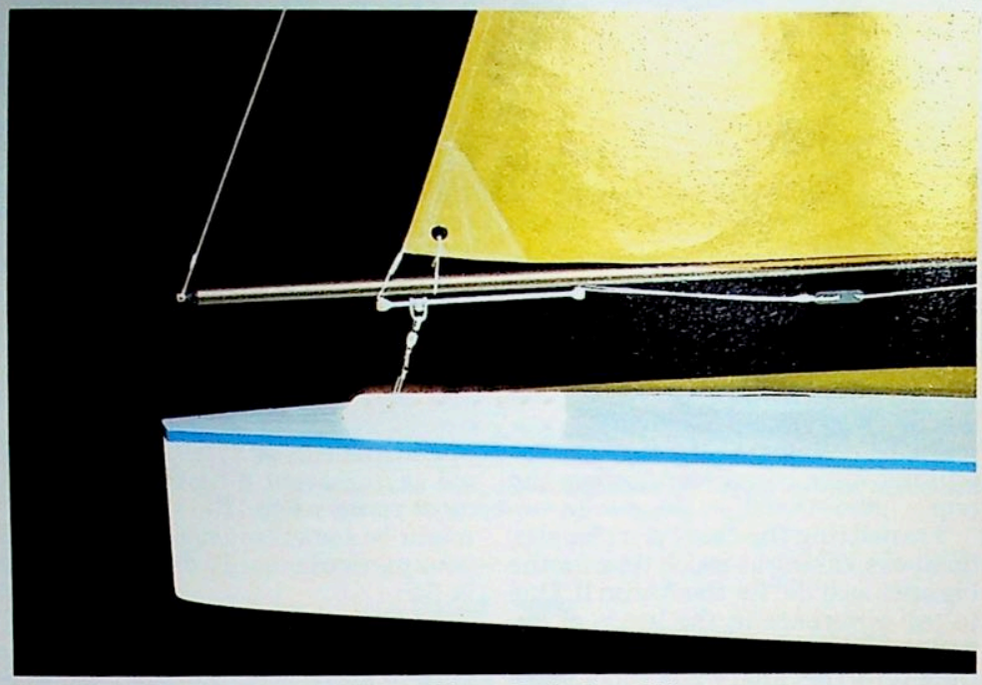
Nicely finished "Magic Dragon Mk II" by Tom Walker, Severna Park, MD. Sails set well and working together. Photo by Tom Walker.



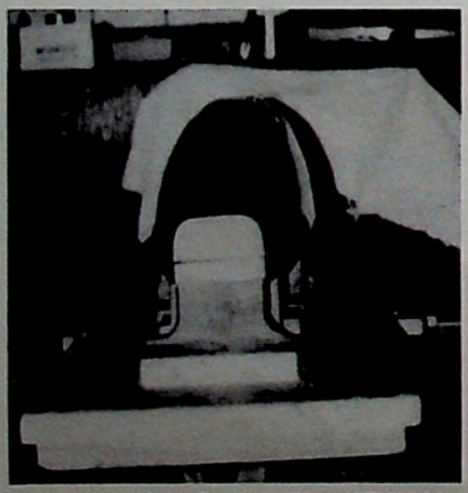
Offset jib rigging arrangement by William Whitten, Birmingham, Alabama.

STRICTLY SAIL

By ROD CARR

It seems that as long as we have jibs on our boats, people will wrestle with the problems of controlling their behavior in all sorts of weather conditions. Our preceding discussions in these pages have made the point that the jib has influences on the mainsail. The rigging which supports the jib likewise has a definite impact on the mast and the loads it must carry. Since varying loads on the mast can affect its shape, it follows that jib rigging must be considered not only with respect to the jib, but to the mast/mainsail combination so important to the power developed by the sail plan.

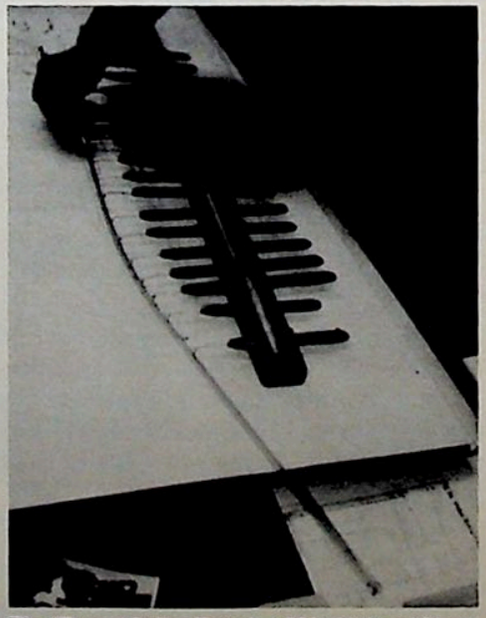
We have explored a number of different ways of setting a jib up, and the postman has started to bring me suggestions for other methods. Photo 1 was sent by Bill Whitten, of Birmingham, Alabama. Bill has chosen the simplicity and reliability of the offset jib swivel arrangement, but he has separated the jibstay, upon which the sail sets, from a forestay which attaches to the forward end of the jib club. By this method he can individually adjust the tensions in both stays. Forestay tension can be set to match the prevailing wind direction and provide proper downward tension on the jib leech. Note that the class rules would allow the forestay to run to the masthead if desired. Jibstay tension can be set to allow the appropriate camber or flow in the sail, again as a function of windspeed. However, adjustment to either of the stays will require additional fiddling to maintain the required mast shape. If both are attached at the 80% location on the mast, it is conceivable that a large variation in the forces on the mast at that point will have to be dealt with. As a minimum, the jenny stays will need attention to maintain a straight topmast. Lower shrouds will have to be slacked or stressed to keep the lower reaches of the mast from bowing forward and removing flow from the mainsail.



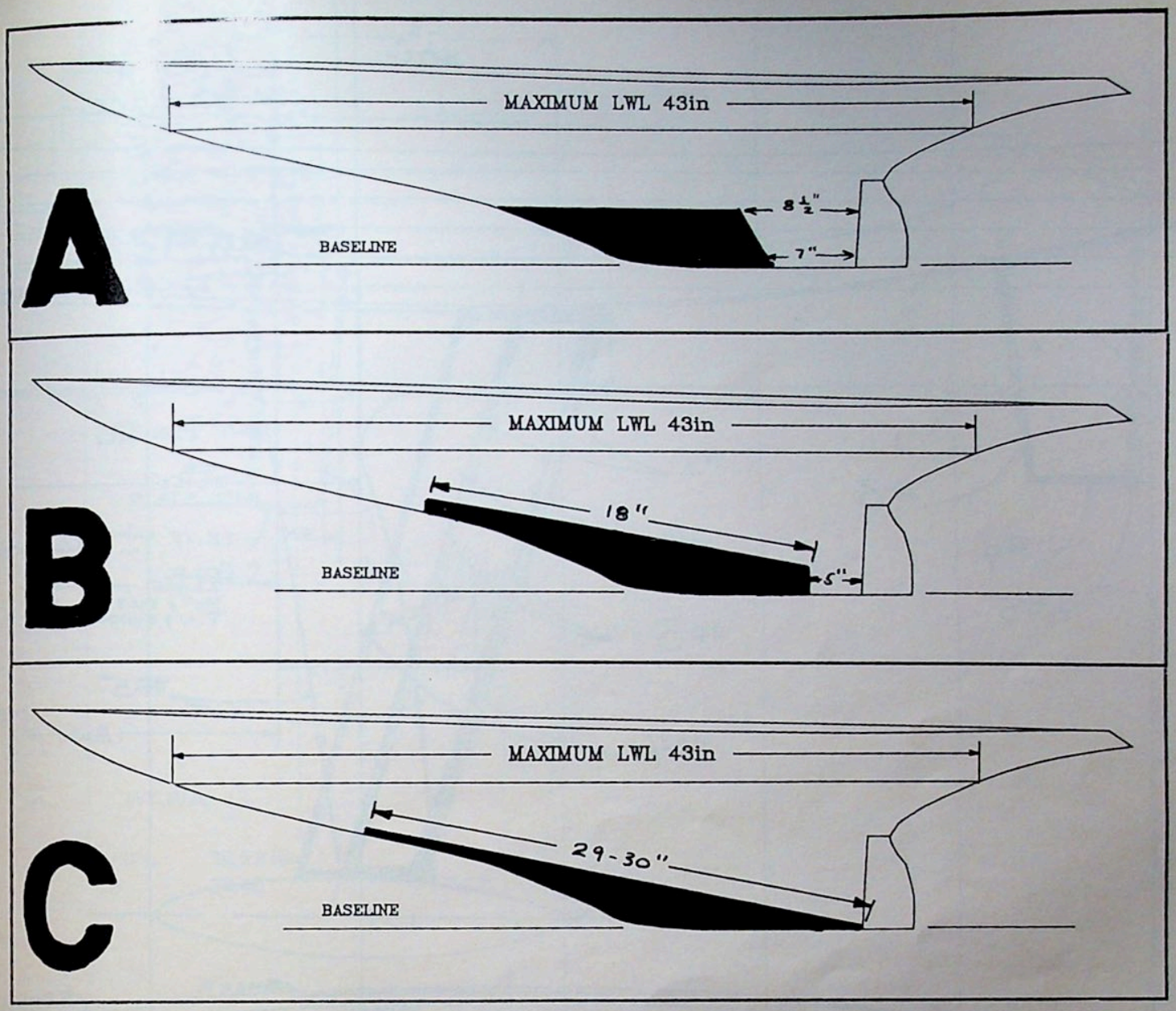
Male plug for John Turner's "Wawa 17" Marblehead. Photo by Turner.

Bill wrote to say that he was considering addition of a jib club topping lift. This would be a line from the jibstay mast attachment point to the after end of the jib club. Intended to balance the force of the forestay, the topping lift provides more control at the cost of more windage and more adjustment which has to be made as the conditions change. Topping lifts have a bad reputation for snagging spreaders, and many skippers have gone to elastic connections designed to keep the topping lift taut during the gybing of the jib. Again, more complexity is the cost of more control.

Anyway, thanks to Bill for his contribution. As a last parting shot, I notice in his photo that there has been

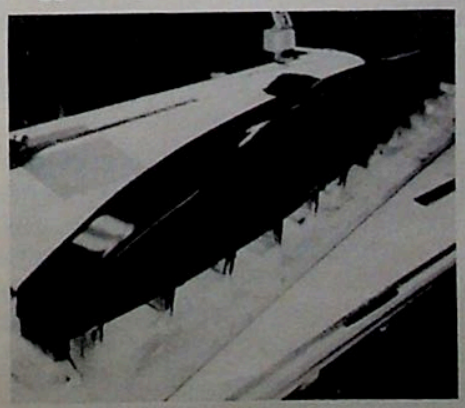


The "Turner Spline Tweaker," Marblehead Class, 1989 version. Turner photo.

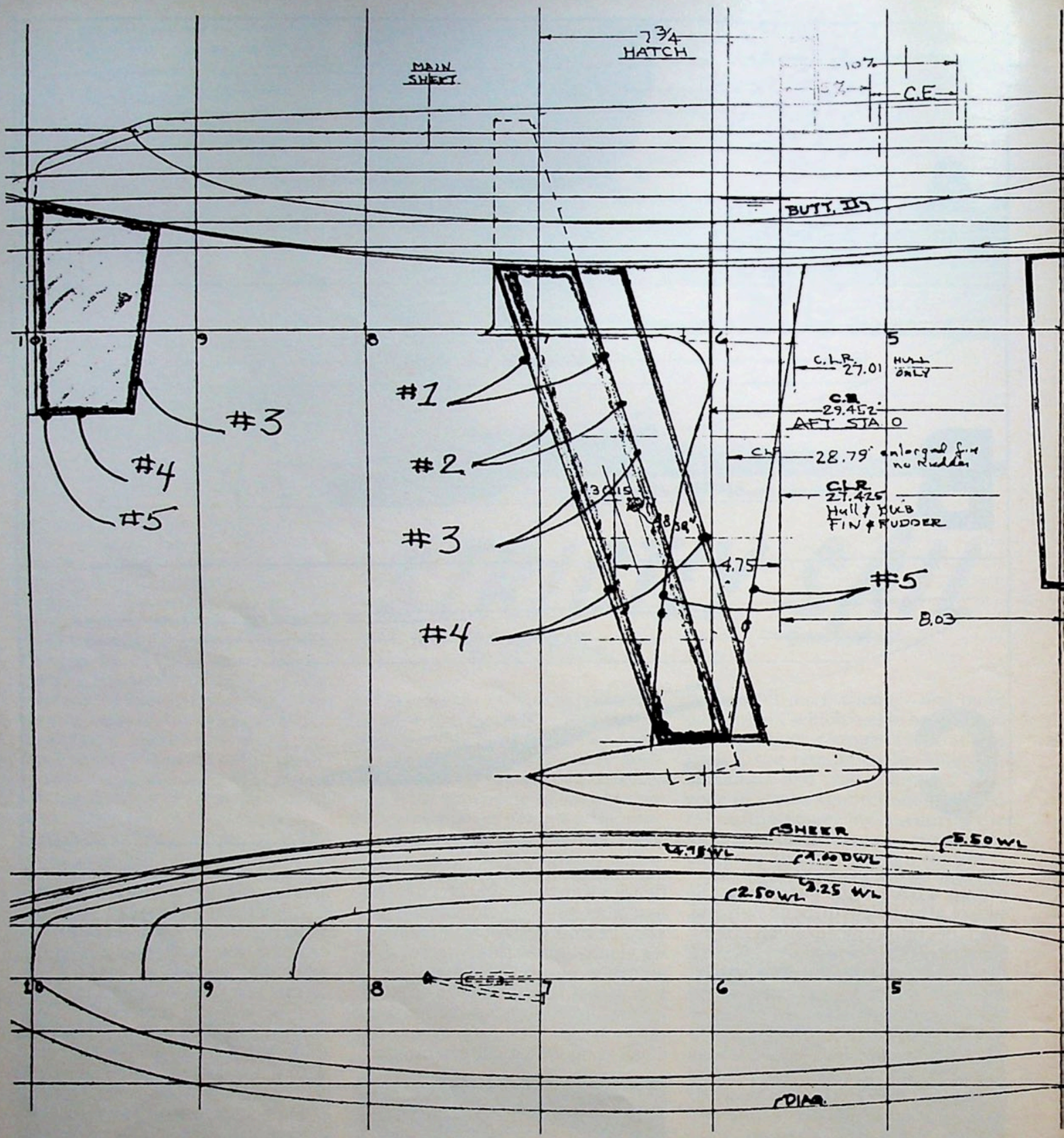


a good deal of effort expended in coming up with a light but strong jib swivel, attachment to the jib club, and even the club is a nice example of light but strong construction. But I believe that the jib rack on the deck may be one of those traditional brass items from A.J. Fisher. Has anybody ever weighed one of those things? Since taking weight out of the ends of a boat will allow her to turn faster and to pitch less, maybe there is another consideration which needs to be put into our complicated equation.

When considering the addition of new controls onto your boat, stop for a moment and try to imagine how much of a benefit they will be in a race which lasts 15 minutes. Will the new control give you an additional three boat lengths per leg? That is hard to figure, you say. I agree. On the other side of the ledger is something that is easier to quantify. Let's say that you typically tack six times between the starting line and the first mark. If you can figure a way to cut that down to only four tacks, you will automatically gain a minimum of 6-8 boat lengths on that leg alone. I know this by careful observation of our one-design fleet of East Coast 12's. There is a direct relationship between tacking and being in the back of the fleet. What I am suggesting is that one can often improve his performance by modifying how he sails the boat, rather than the continual search for some sort of a gadget to put on the boat. Tacking less can help you in all wind strengths, while most gadgets are good only on certain points of sail and of measurable benefit only occasionally. Do I like gadgets? Of course . . . it is part of the hobby. But it needs to be balanced with the operational part of getting a boat around a race course.

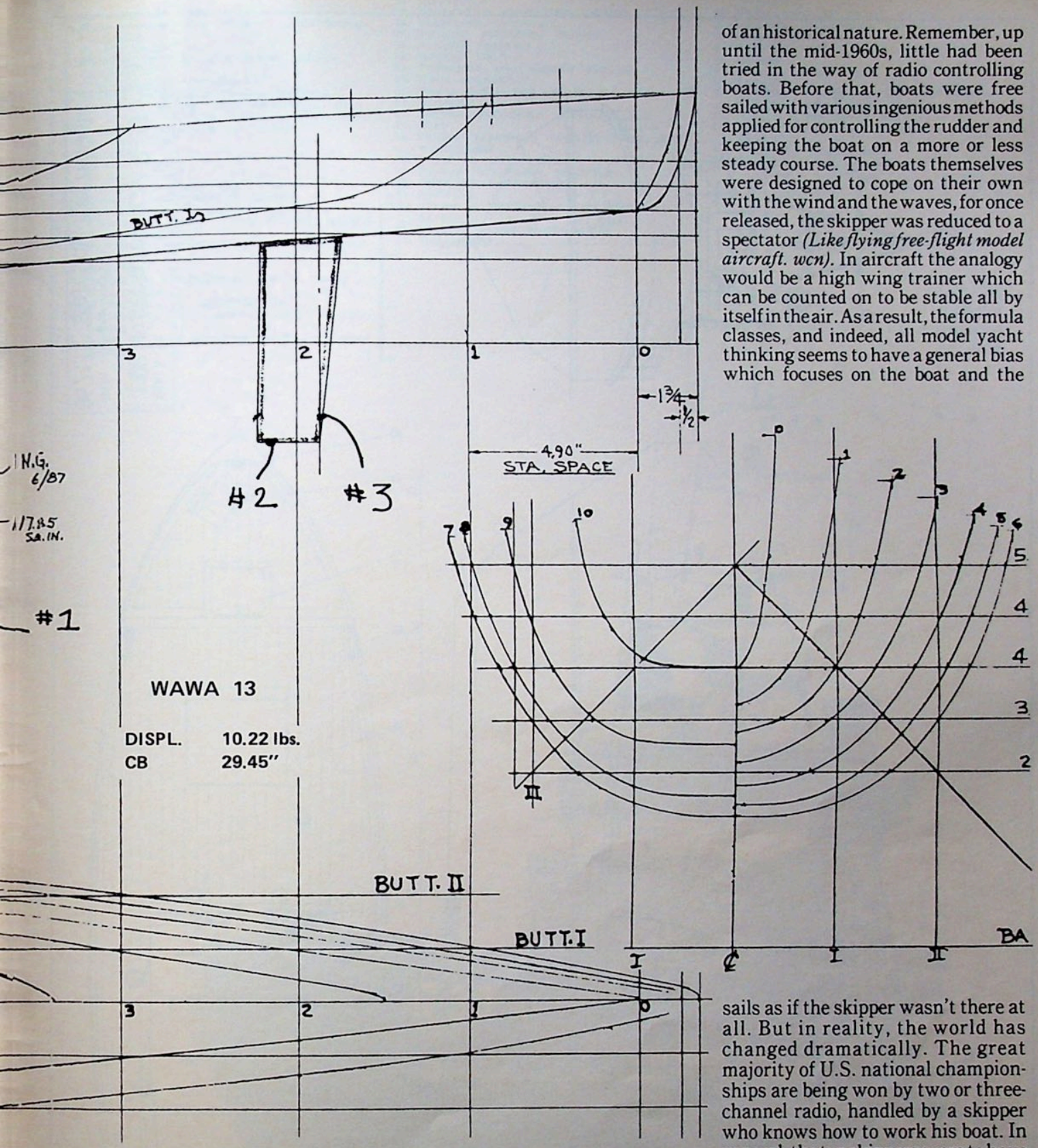

"Wawa 17" exhibits longitudinal variation in hull shape developed by Gerhard Mentges.

The relative importance of the sailing part of the sport was demonstrated most vividly in the recent interclub sailing that has become standard with the five Pacific Northwest model yacht clubs. During the past winter, four new East Coast 12's were built. Using standard Ozmun hulls, all the parts for each boat were completely prefabricated prior to placement of the main lead ballast. In this way, 95% of the lead could be poured into the hull, leaving only a small leeway for trim-



ming the boat. Final stages of the lead pouring were carried out in the float tank so that longitudinal trim would match the proposed requirements of the new EC/12 rule. As is common in any fleet, there was a lot of talk about these new boats. "Superboats" they were referred to. Lightweight drum winches were fitted, with the most precise resolution available by dual spools, plus modular R/C boards and everything planned to a clean and lightweight installation. The unspoken assumption was that this new breed was going to sail right off the cradles into the front of the fleet. What the skippers hoped was that there was sufficient slack in the EC/12 one-design, that some boats could be "more equal than others."

Well, we've been sailing with these new vessels for about four months now. The skippers are doing well, but no better than one would predict from their willingness to work on tactics and an understanding of the rules. In fact, the author continues to chase Kelly Martin, and be pursued by the other three. So, my 16-year-old, non-optimized EC/12, when teamed up



with my bifocals and shaking thumbs, seems not outclassed by the Superboats. . . the one-design concept seems vindicated. There has been one specific advantage discovered in my old swing arm proportional winch. When faced with a buoy rounding from closehauled to running free, the additional speed of the old style winch has allowed me to get the one boat-length jump I needed to hold the nearby competitor in my wake on the run to the finish. The additional precision of the drum winches was obtained at the cost of speed of reaction. Just about anywhere on the boat one looks, if you gain in one area, you are probably losing in another.

A substantial amount of the literature available about model yachting is of an historical nature. Remember, up until the mid-1960s, little had been tried in the way of radio controlling boats. Before that, boats were free sailed with various ingenious methods applied for controlling the rudder and keeping the boat on a more or less steady course. The boats themselves were designed to cope on their own with the wind and the waves, for once released, the skipper was reduced to a spectator *(Like flying free-flight model aircraft. wcn)*. In aircraft the analogy would be a high wing trainer which can be counted on to be stable all by itself in the air. As a result, the formula classes, and indeed, all model yacht thinking seems to have a general bias which focuses on the boat and the sails as if the skipper wasn't there at all. But in reality, the world has changed dramatically. The great majority of U.S. national championships are being won by two or three-channel radio, handled by a skipper who knows how to work his boat. In general, the top skippers seem to have the cleanest, simplest . . . and hence most dependable boats in the fleet. Complexity appears to draw the attention of our good friend Murphy, who bides his time and strikes just when you need a good finish to sew up a trophy for the day's work.

A lot of boats go sailing by my nose and it is obvious that the skipper has

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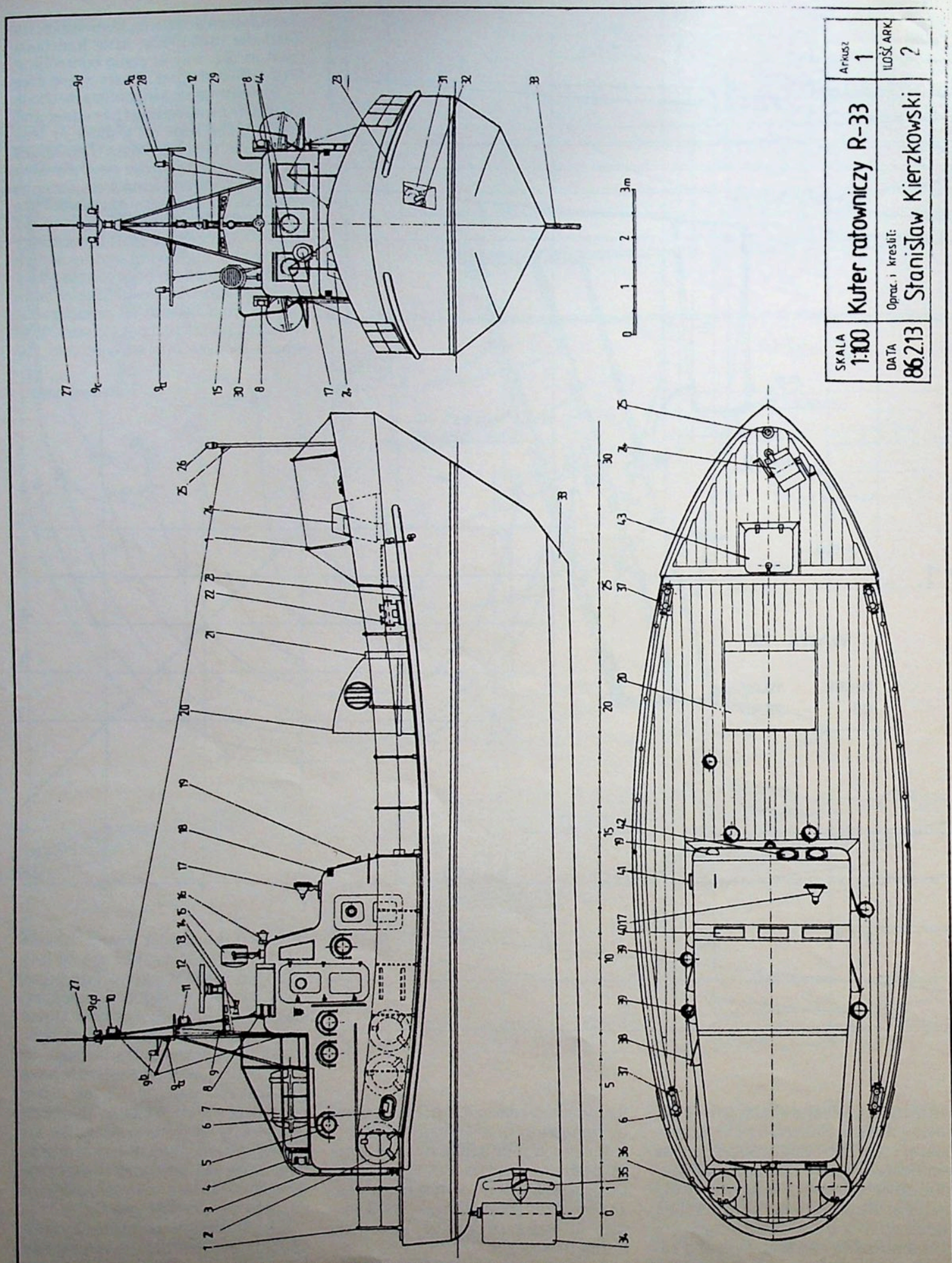

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   c) czerwone,
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11. Światło nawigacyjne (białe)
12. Antena radaru nawigacyjnego
13. Platforma masztu pod antenę radaru
14. Sygnał mgłowy
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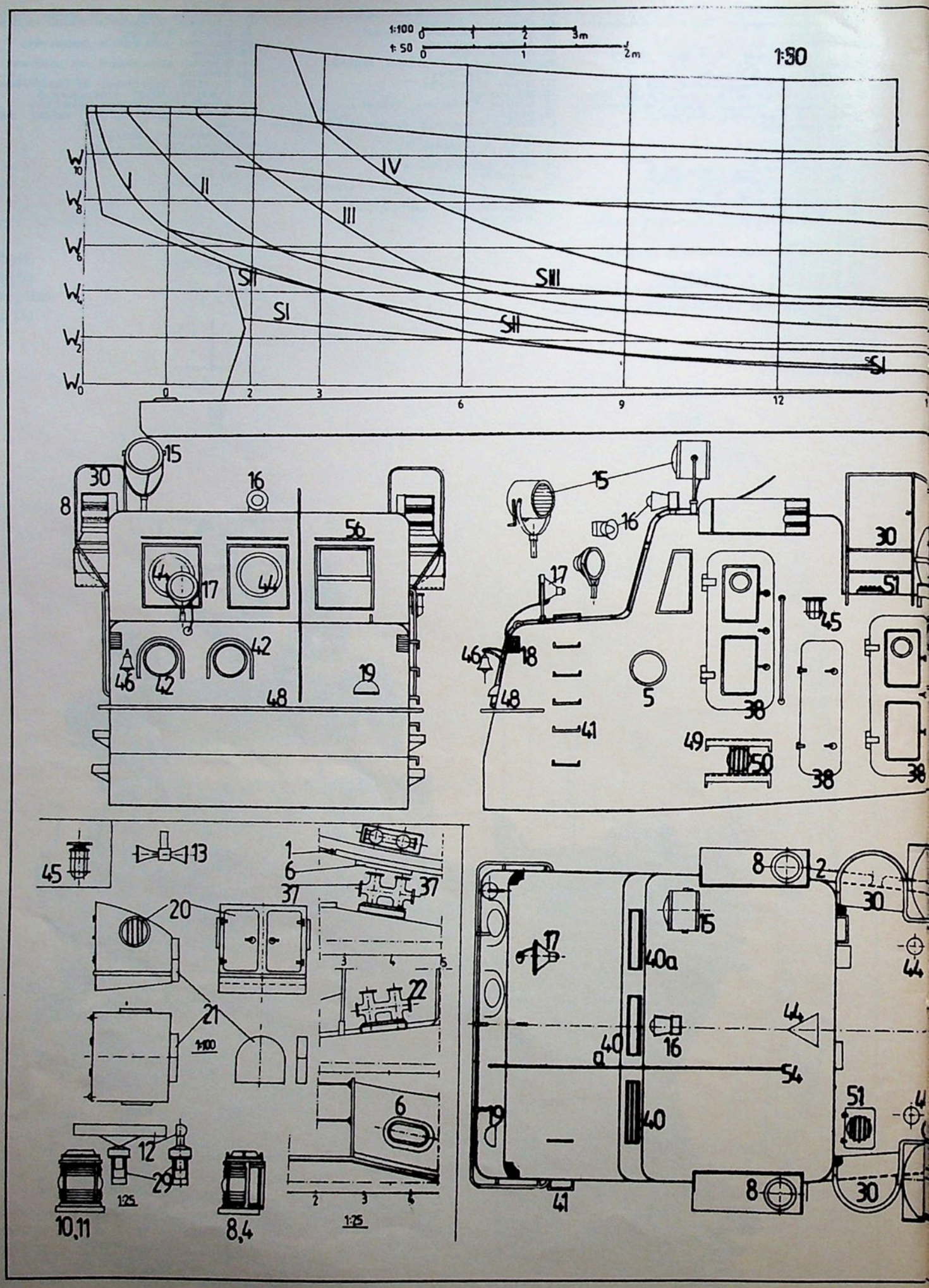
16. Megafon
17. Reflektor pokładowy tzw. rybacki
18. Wentylator
19. Wentylator w nadbudówce
20. Zejściówka do pomieszczenia ładunkowego
21. Kosz na wąż przeciwpożarowy (czerwony)
22. Pachoł krzyżowy podwójny dziobowy
23. Odbojnica
24. Wciągarka kotwiczna ręczna
25. Flagsztok dziobowy
26. Światło dziobowe (białe)
27. Antena radiowa
28. Antena UKF
29. Podstawa pod antenę radaru
30. Kosz sygnalisty
31. Kluza kotwiczna
32. Kotwica
33. Stępka balastowa belkowa
34. Ster
35. Śruba napędowa (4-skrzydłowa, prawoskrętna)
36. Właz do magazynku
37. Pachoł krzyżowy podwójny
38. Właz do nadbudówki
39. Świetlik
40. Okno w nadbudówce z wirującą szybą
41. Stopień trapu nadbudówki
42. Iluminator
43. Właz do forpiku (magazynek bosmański)
44. Podstawy pod maszt (stopy masztu)
45. Latarnia pokładowa (białe światło)
46. Dzwon okrętowy
47. Kotwica admiralicji (zapasowa)
48. Reling
49. Stopień prowadzący do sterówki
50. Świetlik
51. Świetlik z włazem do nadbudówki
52. Pokrywa kluzy łańcuchowej
53. Stoper łańcuchowy kotwiczny
54. Kabel koncentryczny anteny radiowej
55. Wspornik nadburcia
56. Rynienka okna

Dalsze zdjecia na następnej stronie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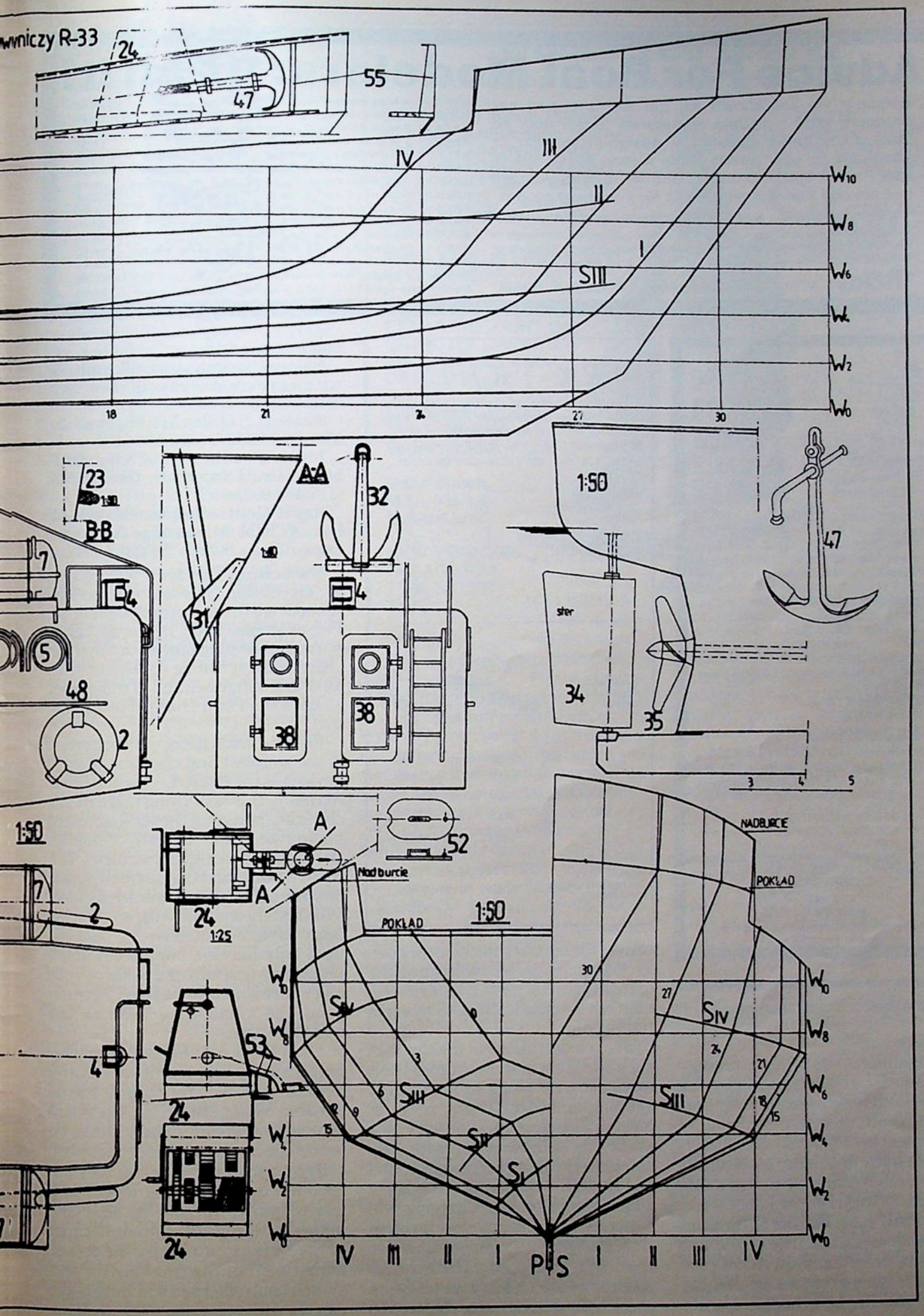

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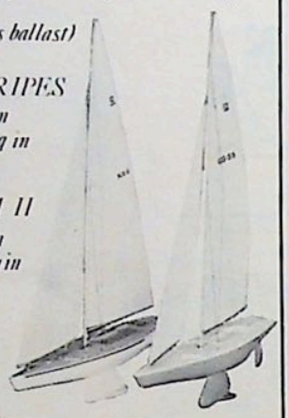

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Radio Waves. . . . *Continued from page 62*

the lake.

In addition to its primary function as described, a battery backup system can be used to increase running time, in installations where the usual replacement of the normal sized battery creates a size or balance problem. For example, say you wish to replace the system 500 mAH battery pack with a 1200 mAH unit, but the space is not available or the balance of the boat changes drastically. In either case, possibly the use of two smaller batteries will fit the available space or restore the normal balance to the boat. In this case, your radio will run off the original battery until it is depleted, and then automatically switch over to the backup.

The considerations in the choice of such a device are rather simple: (1) is it available with plugs to fit my R/C system, and (2) charging requirements. The plug question will be a minor one to those of you with easy access to the proper connectors, and handy with a soldering iron, but a larger one to others. Charging two batteries will not be any more involved than charging a single one provided the chargers equipped with the correct connectors are on hand. In all cases, check both of these factors before you make your purchase.

Battery backup systems, probably with some catch name all their own, are available from:

Ace R/C, P.O. Box 511, Higginsville, Missouri 64037; (816)584-7121.

Jomar Products, 2028 Knightsbridge Dr., Cincinnati, Ohio 45244; (513)474-0985.

Radio Controlled Models (RAM) Inc., 4736 N. Milwaukee Ave., Chicago, Illinois 60630; (312)282-1015.

Switching Devices will be next for discussion. These are devices intended to turn something on and off. For example, such items as lights, pumps, glow plug power, or anything else electrical can be controlled from an unused channel, and in some cases as an add-on to a channel already in use.

First for discussion, only because it is the simplest and cheapest of such devices, is the Ace R/C "Switch Box." Actually, this is nothing more than a clever adaptation of the servo actuated micro switch, but it greatly simplifies the installation and adjustment. The Switch Box is just that, a small plastic box in which a micro switch is located, to be installed in line with an existing pushrod, or operated with a pushrod used only for this purpose. A small plunger is secured to the pushrod with a set screw at the desired turn-on point, the whole thing is simple but quite effective.

Then there are the more sophisticated purely electronic switching devices, which might require a little advance explanation. Like the micro switch, they are ultimately a turn-on (or-off) device, but are not mechanically operated. Like a servo, they are operated by the varying length of a control pulse starting at the transmitter and being faithfully duplicated at the receiver output. By the proper adjustment of the transmitter and switch controls, the switching point can set with great precision. In some

cases, more than one can be operated from the same channel, for example one at each extreme of stick position.

The first such device I want to share with you is Jomar's Universal Electronic Switch. This is small in size, but impressive in performance: 1.5x8x3-inches at 18 grams, yet capable of switching 10 amps at 12 volts. It comes complete with wire leads and Sermos Power Pole connectors, and Jomar claims it is just the ticket for on-board glow power, video camera control, smoke fluid pumps, electric motors, and more. Price is $35.00.

Also from Jomar: the Dual Accessory Controller, which can be used to operate two electrical units of any type from a single channel. Each side of this controller is capable of handling up to one amp at twelve volts, which will take care of most accessory items. Not large either, only 2.1x1.4x.8-inches, at 3/4 ounce. Not bad for only $35.00, huh?

Then there is the McDaniel R/C MOSFET Digital Power Switch, which is offered primarily as a glow plug operating device, but can also be used to switch current on or off to any of the other electric powered accessories. $34.95 for this. Information from: McDaniel R/C Inc., 12206 Guinevere Rd., Glenn Dale, Maryland 20769; (301)464-260. Actually, the original intent of this unit, to provide battery power to the glow plug at engine idle, is well worth your consideration for those scale projects that involve a lot of low speed engine operation.

Then there is a selection from:

Robbe Model Sport, 180 Township Line Rd., Belle Mead, New Jersey 08502; (201)359-2115. First there is a variety of servo operated micro-switch modules designed to mount directly on top of a Futaba servo. Functions available include much more than the simple on-off basics, extending to three-stage units, memory units that stay on until the servo is actuated again, and one good for electric motors up to 20 amps.

The electronic versions also offer great variety, from a simple one function switch good for horns, lights, etc., to a duo-switch providing two switching functions from the same R/C system channel. In combination, the Robbe mechanical and electronic switches offer possibilities limited only by your imagination and skill. The prices range from about $20 to about $40, depending on complexity, and it is best that you obtain a Robbe catalog for the complete descriptions and recommended uses.

The Robbe catalog contains a wealth of information of interest to boaters anyway . . . sirens, horns, lights, engine noise generators. . . and also contains full information on the Robbe "Terra Top" R/C system. This Futaba manufactured, warranted and serviced system, available only from Robbe Model Sport, starts off as your basic two stick system, expandable with up to 12 additional channel by easily installed plug-in modules. It is an interesting concept, with wide applications in scale boating.

RAM's Dual Servo Setter is about all I have space left to tell you about. This unit, which installs between the receiver and servos, provides the same type of fail safe operation as is found only on the most expensive PCM radios. Upon the loss of the radio signal, due to transmitter failure or sustained interference; or under low receiver battery conditions, the Servo Setter moves two servos to a user preset position. For example, low throttle and a shallow turn is certainly better than full throttle and a direct course to Pago Pago! The DSS is priced at $39.95. . . cheaper than a new boat, right?

Let's squeeze in an interesting note! Jomar Products offers what it refers to as a $40 incentive: get a photo of your model in a national magazine with a caption that mentions the use of a Jomar product, send in a copy, and you'll get a check from Joe Utasi, Mr. Jomar himself, for forty bucks. Let's see now, there must be about twelve magazines, and I have friends at all of them. I figure in about eight rolls of film I ought to own Jomar Products. . . I wonder if I'd have to move to Cincinnati. ●

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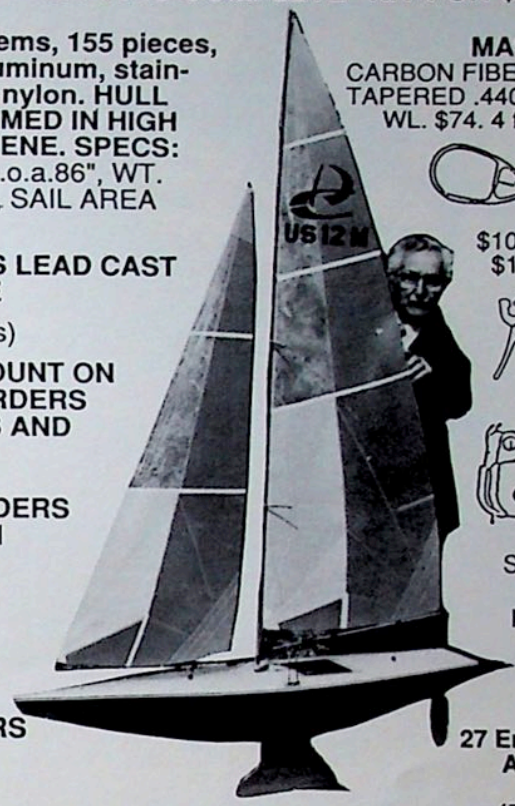

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Shipwright . . . *Continued from page 61*

anchor of those from Electric Boat in New London was installed on the starboard side. The stated purpose of the talk was to show that modern weaponry is as fascinating as smooth bore cannon, and thus to encourage building of a miniature counterforce to the U-boat in the other room.

He also discussed the evolution of submarine design into the nuclear age, and showed slides emphasizing the peculiar wave forms thrown up by the latest types, for diorama builders. Slides of the interiors were more limited in number, of course, but every participant could see today's equivalent of the old shipyard photos just across the river as they drove home.

To top off the day, the Long Island club had arranged for donation of a long list of door prizes, which included

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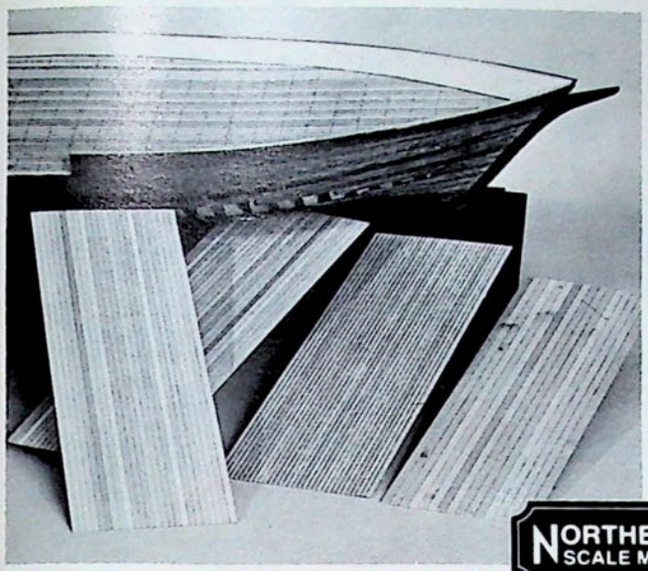

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gift certificates and books from Bluejacket, Model Shipways, and Model Shipbuilder magazine. Each of the clubs put up a prize as well: books, a kit, and one of the most basic modeling materials, cash. Preac Tools, which had attracted a crowd all morning demonstrating a precision table saw, donated the saw itself at the last minute, a very generous prize.

A prize was also given to each winner of the balloting for the models exhibited: choice from a group of three ceramic plates decorated with scenes of famous ships. The most votes were given to a construction style (exposed ribs and frame, oiled finish) USS Constitution built by Len Brainsky of Connecticut. Second most popular was Bluenose II, finished by Jim Wiser and mounted in diorama style, and third was Bob Okerholm's modern frigate Hancock.

The results of the balloting generated some lively discussion, too; particularly, expressions of surprise that so knowledgeable a group would still favor the old standard subjects. Clearly, the obligation to vote heightened everyone's concentration during the morning viewing, so there was plenty to talk about on the way home.

More than 100 model builders and enthusiasts attended the meeting, and quite a few brought models: a great success. Why? A central location, so everyone could be home for dinner; modest cost ($22); an information-packed program showing techniques of interest to kit builders, and to advanced modelers; presentations with enough meat and heat to be food for more thought; and enthusiastic promotion by each club among its membership. A lot of work is demanded of the volunteers who organize such a meeting; but it is demanded only once every four years at most, and it is very satisfying work. •

Strictly Scale. . .*Continued from page 67*

substituted an ever-increasing selection of doodads and widgets, when what he really needed was to spend some time learning how to set and trim his sails. The ultimate in precise adjustment is only a benefit if you fully understand what the adjustment is doing for your boat's performance, or in some cases, not doing.

I have been asked to assess how much of a boat's success can be assigned to the skipper, and how much should be the physical arrangement of the boat. I have to go back to the common ground of the EC/12 class to develop a basis for an answer. Since we are continually reminding ourselves what a complex and interrelated system our boats are, let's explore this idea with a focus on one part of the boat, the main ballast. In the EC/12, we have a standard hull form, and we will have a standard fore and aft trim represented by the maximum LWL marks. How the ballast is arranged in the boat is very much up to the skipper. Figure 1 shows three distinct arrangements. The first is the standard way that boats were built from 1970 up until about 1981 or 1982. The second is a configuration employed by our Australian counterparts as they tried to fit the boat to the heavier air that they often encounter. The third is an obvious compromise between the first two.

If you talk to any skipper, he will inevitably tell you that the key concept in deciding how to ballast your hull is the location of the center of gravity. The lower in the boat, the stiffer the boat and the more it will stand up to stronger winds.

Now, here in our local clubs, there are boats representative of all three arrangements. There is an obvious difference in stiffness, with the boats getting stiffer the lower the lead is placed. But the author is sailing a 16-year old boat that is probably the most tender of any in the fleet, and not catching Kelly Martin, our current National Champion, but in general staying ahead of the group of boats who are all stiffer.

What goes? Well I believe it lies in a totally different aspect of the lead arrangements within the boats. You notice that while the lead is lower from 'A' to 'B' to 'C', it also becomes elongated. The length of 'A''s lead is 10 inches, while in the extreme 'C' it can measure a distance of 24 to 25 inches along its length. The difference in performance comes in the rotation of that lead about both a horizontal and a vertical axis. Once set swinging by the rudder, the long bar of lead in 'C' develops a rotational intertia which is far greater than the more compact mass in 'A'. 'A' develops two benefits from this: 1) Less rudder is needed to start or stop a turn or tack, thus preserving more boat speed and momentum; 2) The same degree of rudder throw will turn the boat in a smaller circle with no decrease in boat speed. All things being equal, boat 'A' will be more maneuverable, will lose less speed in the tacks, and in addition,

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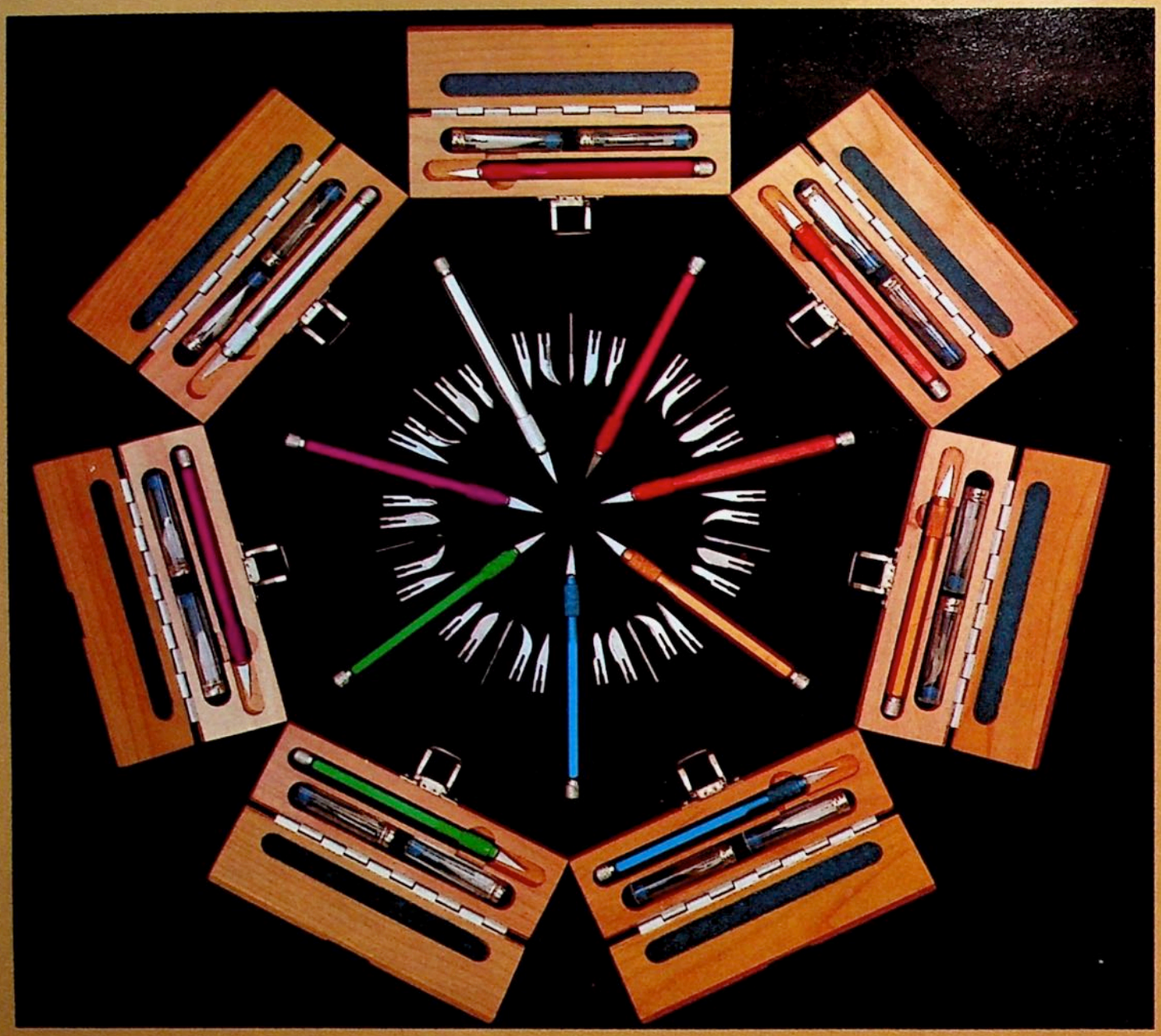

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will pitch less in rough water, also conserving boat speed. So the tenderest boat turns out to be more maneuverable and less likely to be stopped by pitching in a lumpy lake. Here we have another of those tradeoffs which our sport is so full of. Do I want the stiffest boat, or the most maneuverable? Do I sail in waves or smooth water?

Finally it needs to be said that when people borrow my boat they often are disappointed by her windward performance. She does not strongly follow the wind direction with significant weather helm, but being a tender boat, must be worked to weather. Often the lighter boat does not point with the fleet, but makes a better net progress to weather by a combination of boat speed and scalloping between wind and waves. What comes out of this is some kind of assessment of the relative importance of skipper and boat. In my case, the combination of a somewhat tender but maneuverable boat and my willingness to work the boat to weather provides better overall performance than a simple decision to go for the stiffest boat one could get.

I'll maintain that the skipper is the dominant force in virtually every class. But when one gets into the top 10% of the skippers, such as Divisional Championships and of course ACCR's, the boats come more into their own as the relative differences between the skippers narrows. One thing is sure, it doesn't matter what kind of a boat you have if you haven't taken the time to learn about sail trim, about keeping the power on the sails, and minimizing the steering and tacking that you are doing on the course.

In defense of the Superboat skippers, I have to admit they are doing better as a group, but more because of their willingness to study and learn about all aspects of sailing in general than the simple addition of gadgets. Building a new boat causes you to think things through again . . . if you are willing to exercise your brain a bit. The result is improved understanding of the relationships between the different parts of the boat, and their impact on performance. Sailing with the Superboat skippers is excellent, for no quarter is asked or given . . . but the rules are scrupulously followed, with 720's turned when the skipper knows he fouled. Fourth and fifth places are furiously fought for, and at the end of a 14-race regatta, one feels as if he was sitting on the boat actually hauling on the sheets.

I have received some very interesting response to my call for the sharing of designs from John Turner, 107-B Seminole Lane, Stratford, CT 06497. John has been busily involved in working through an entire series of M-Class boats which he calls the WAWA. Currently working on WAWA 17, he sent me some examples of the earlier boats in the series. Photos 2 and 3 show a sneak preview of WAWA 17 which was inspired by a series of design articles in *Model Yachting News,* by Gerhard Mentges. Photo 4 shows some of the progressive evolution of hull shape that is the result of Mentges' studies of hull-water interaction. John was looking for someone to make a mold from the plug when he sent the photos to me.

John is kind enough to share some details with us of the earlier boats in the series and the figure shows his working drawing of WAWA 13. He experimented with a series of different keel and rudder configurations. Having sailed a canard BONE back in the late '70s, I was interested in his conclusion that bow mounted rudders are not for the birds either. Some of that must surely come from the incredible lightweights that are typical with current M-class boats. WAWA 13 was designed at 10.22 pounds. I would suggest that you correspond directly with John if you would like to make arrangements to buy one of his designs for construction. He may even be willing to discuss manufacturing rights, provided a royalty arrangement can be worked out.

But back to WAWA 13. Configuration No. 1 was a forward sloping fin with a rather close set and deep rudder. This arrangement had great straightline speed, but maneuverability was "lousy" according to the designer. Configuration No. 2 kept the same fin, but reduced the size of the rudder and moved it forward. Not much improvement was found, possibly in that the rudder action is forcing the bow of the boat to turn, pushing it, rather than what may be a smoother, "trailing" kind of action when a stern mounted rudder is used. (Any comments from you budding naval architects out there? Anybody else done experiments with canard forms?) Configuration No. 3 added a stern mounted rudder, keeping the same fin and the bow rudder. This was much like the approach taken by Tom Blackaller's America's Cup 12 Meter. Maybe the trick here is to decrease the keel fin to as small as possible and use the rudders as the side plane and the leeway reducing mechanism. I can see the rudders might

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have to work together, as well as being separately trimmable. Should be possible, but tricky. Configuration No. 4 removed the bow rudder and substituted a somewhat larger area fin. The rig had to move back for proper balance to weather, but this arrangement was better in performance than any of the three before it. I've always wondered why what we are used to seems to work better. Maybe we are not so open to new ideas as we would like to think. As a last experiment, the dog leg fin was fitted, mainly to take advantage of the keel mounting assembly in the hull (dotted at Frame 7). At this point the WAWA 13 was pronounced the equal of its predecessor, WAWA 12. In my opinion we've two designers in the U.S. who have gone out of their way to share the meat and potatoes of technical design and innovation . . . Karl Kirkman and his famous BONE series, and now John Turner and the WAWA line. For everyone out there with technical interests, let me say thank you to you both.

John and I have been corresponding since 1986, when we were working on the FAIRLINE line fairing program that John Letcher had put into the public domain. Remember that no matter what kind of computer support you use, it is support. No computer can dream up for you a winning hull. All the PC can do is fair a hull form between discrete stations that you have designed. The art of hull design is still just that . . . an art. Fairing of lines by eye is still an accepted practice, and there are those who are vocal in their charge that no computer can tell when a line looks "sweet." Photo 4 presents the Turner Spline Tweaker (TST). John has made this adjustable device to do the job of a handful of individual spline weights. He says that he gets so much pleasure out of actually drawing and cross checking the lines for his hulls, that he doubts the computer will really have a chance to replace either him or his drawing board. Maybe if we twisted his arm he would be willing to share a construction drawing for the TST.

Enhancements to the FAIRLINE program have been accomplished by Geoff Kampe, P.O. Box 467, Hinesburg, VT 05461. He has made the program much more user friendly and armed it with a capability for doing some incremental changes useful in answering "What if . . ." kinds of questions. If you want a copy, please send him a new floppy disk and a preaddressed, stamped floppy disk mailer. A stamped, self-addressed envelope is a courtesy which you should accord anyone who you are asking for information.

As was pointed out by our Editor last issue, TAUBMAN PLAN service now carries the full line of English MAP plans for sailing craft. Included in their inventory are some of the excellent designs by Bob Sterne of Vancouver, B.C. TAUBMAN's catalog is a lesson in itself. See the advertisement in this issue.

The more things change, the more they remain the same. This seems to hold true in the model yachting arena as in other places. While recently working on the history of the M-class, I ran across a report of the first Marblehead officially registered in the United Kingdom. K-1 was described as being of approximately 36 inches on the waterline and with a displacement of approximately 12 pounds. Almost sounds like a modern displacement, doesn't it, but in the early 1930s. Subsequently, the class in England built its way up to a post war design that topped 30 pounds. The boat was used in a heavy air region of the British Isles in manmade concrete walled ponds which made for lots of reflected chop.

The progress report on POCOHANTAS, my 1936 vintage, M-class

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reproduction, is embarrassing. It has lain in the cradle catching dust for almost three months while other projects have come and gone, not the smallest of which was a new 18 x 28-foot outside deck attached to my home that replaced a smaller version which finally succumbed to the Pacific Northwest humidity. Although POCOHANTAS needs only fitting of the keel and rig, I think I have about decided to allow a modification below the waterline and go for a 7.5 pound fin and bulb. This will allow me to increase the aspect ratio of the sails somewhat in hopes of better light air performance. Almost a dozen copies of the lines for POCOHANTAS have been mailed out, and a local chap has gone off with the original shadows, mumbling something about planking up a hull. I am hopeful that we will have a picture of at least one of the boats on the water soon.

Please let me know what is happening in your pond. Photos are always welcome. I'm especially interested in collecting main boom, gooseneck, and vang fitting ideas for an upcoming column. I've received a few already, and would like to do an entire article on that subject. Remember to send in your $20.00 annual dues to the American Model Yachting Association, c/o Membership Secretary, Pat Hein, 1884 Campus Court, Rochester Hills, MI 48309. •

Cap'N'S Log .. *Continued from page 9*

Blue beacon strobe light
Operating search light
Operating navigation lights
Operating interior lights
Walkway lighting (with handmade fixtures)
Floodlights over small boat deck
Operating smoke stack (with real diesel smell)
Working anchors and winch assembly
Fully operational small boat boom (can lift, swing, and lower small boat into water)

Sal also points out that the paint used on the model came from the paint locker at the Coast Guard station. Built-in color documentation! Thanks for the response to our request, Sal, you've done a job that should make you proud, and we can see that you certainly deserved that Master Modeler award!

ANOTHER COAST GUARDER

Robert Klubertanz, 70 years young and a retired tool engineer from Holmen, Wisconsin, sent us photos of his 40-foot Coast Guard Utility Boat model, scratch-built to 3/4" = 1' scale (Again, Taubman has 1/4" and 1/2" scale drawings), making it 30 inches long. The original 40559 was assigned to Milwaukee, WI during the late 1940s and 1950s.

Robert says, "The model has twin electric drive with home-built motor controls. The motors are each independently controlled, so that one motor may be stopped, half or full speed ahead, while the other may be run astern or stopped. Boat can be turned in its own length . . . planes properly at full speed. All navigation lights and anchor and towing lights operate independently so that correct light combinations can be displayed.

"The rear, hinged, cabin door can be opened and is latched shut by means of the doorknob. The ring buoy and life raft can be removed from their brackets. The left front cabin window is hinged and operable. The bow hatch is also hinged and provides access to the radio switch. The Danforth anchor is correctly lashed in its chocks and the anchor flutes pivot as on the prototype.

"The life lines are elastic cord with shackles, so they can be unhooked in order to remove the cabin top. Both fire axes are in chocks and removable. Instruments are mounted below the panel and are plastic covered."

Robert is currently working on a model of the 41-foot Coast Guard utility boat that is now stationed in Milwaukee, and plans to enter it in the Custom House Maritime Competition and Exhibition commemorating the 200th anniversary of the founding of the U.S. Coast Guard, which takes place next year. More details of this event were published in this column in our Summer '89 issue. If Robert's 41-footer comes out like the 40-footer, he'll be right in the thick of the competition!

OFFSHORE WINNER

D.M. Cross, of Dorset, England, sent in photos of his "Cobra 63" which won the Offshore Model Racing Association championships in 1987. Mr. Cross has been developing giant scale offshore racing power boats for five years, and it seems to have paid off, as he also won the O.M.R.A. championships in 1988 with a 72-inch long scale "Cigarette." Both boats were powered

INDEX TO ADVERTISERS

A.J. Fisher Co. 60
Ace R/C Inc. 51
Coles' Power Models 50
Dumas Products, Inc. . . . . Cover 2
Dynamic Models 53
Full-Size Plans Service 78
Gilmer Hobby & Machine, Inc. 55
Hartman Fiberglass R/C 54
Hayes Products 52
Hobby Lobby International . . . . . Cover 3, 80
Hobby Stuff Inc. 56
International Hobby Corp. 63
International Modeler Show (IMS) 4
K&S Engineering 56
M.A.C.K. Products Model Marine 44
Midwest Products Co. Inc. 1
Model Builder Subs 60
Model Racing Products 3
Model Rectifier Corp. (MRC) . . . . . Cover 4
Northwest Hobby Supply 51
Northeastern Scale Models, Inc. 67
Octura Models 58, 61
Parma International Inc. 5
Pop Up Mfg. Co. 69
Prather Products 71
R/C Model Car Subs 74
Radio Controlled Models (RAM) 72
Robbe Model Sport 59
Satellite City 57
Skunkworks Mfg. Co. 45
Steve Muck 52
Taubman Plans Service Intl. 72
The Dromedary 52
The Scale Shipyard 42
Traxxas Corp. 17
U.S. Boat & Ship Modeler Subs 33
Uber Skiver 76
Victor Model Products 72
West Side Racing Products 74

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with "weedcutter" type two-cycle engines.

The "Cobra 63" in the pictures is by strange coincidence 63 inches long, has a beam of 15 inches, and weighs a little over 40 pounds. It's fitted with a slightly modified 33cc Kawasaki engine coupled to a surface drive. Cross says it is a very flat running hull, can make full-throttle turns in almost the boat's length, and on smooth water, hits about 35 mph. In addition to the surface drive, it uses a Levi rudder, which is half of a Kort nozzle. In rougher water, the speed picks up, which, added to the roughness, takes an experienced hand at the wheel.

Full size plans are available for the Cobra ($20 plus postage and packing), but are for experts only, as they are hull lines only; no construction details. Also, Cross says that if any manufacturers are interested, he can provide information on the 72-inch "Cigarette" as well. His full address is 68 High Street, Lytchett Matravers, Poole, Dorset BH16 6BH England, phone 0202 625056.

RIVER GUNBOAT

From Richard Cohen, Tampa, Florida, comes photos and description of a rather obscure (well, to me, anyway) model of a steam powered English river gunboat. This 26-inch long boat was built from plans published in the January 1982 issue of an English magazine called "Do It Yourself." Richard obtained Xerox copies of the plans and article from the Unit Steam Engines company near London. If any of our readers are interested in a copy of the article, along with Richard's notes on building tips, sources for engines, etc., they are available simply for an SASE to Richard D. Cohen, 11802 Willow Point Way, Tampa FL 33624.

To quote the article in the English magazine; "The steam propelled 25-foot naval cutter on which this 26-inch model is based, was designed at Portsmouth Dockyard in 1888. It is powered by a Stuart-Turner engine and is armed with a five-barrelled Norden felt (?) machine gun. It was used for estuary and coastal patrol work, landing parties, and for quelling the Queen's enemies in foreign ports."

INDUSTRY INFO

A couple of items missed the "Ship's Store" this month, so we'll sneak 'em in here. First there is the new high-performance O.S. .21 EX-M marine engine. This two-stroke engine features a type 20 carb, water-cooled cylinder head, ABC construction, Schneurle porting, and a ball bearing-supported crankshaft and flywheel. It develops 1.65 bhp at 28,000 rpm, which makes it almost the hottest engine in this category. . . . It is distributed in the U.S.A. by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820.

The second item we want to bring to your attention is the monstrous plans catalog available from Taubman Plans Service International. As Abe Taubman says in his advertisement for the catalog, which you'll find on page 72 of this issue, "If the plan is commercially available and TAUBMAN PLANS SERVICE 'Don't ain't got it' then probably nobody 'Don't ain't got it.'" Nearly a half-inch thick with its 192 pages, this catalog contains plans for vessels you can hardly imagine ever existed, let alone being able to build models of them! The latest release is for a Canadian steam powered tug . . . the last of its kind and now a museum piece in Toronto, Canada. Called the "Ned Hanlan," it was of steel construction, 80 feet long, and was used as an ice breaker in the winter, and year 'round as a ferry link for hundreds of island residents in the Toronto area. Included with the 1/4-inch scale plans is a color postcard photo of the tug to assist modelers.

Refer to the advertisement for instructions on ordering the plans catalog. It will provide hours of interesting perusal, even if you don't order any plans . . . Heaven forbid! Be sure to include the "Dept. RCMB" in the address when you order. We all know it's so Abe can tell where you saw the ad, but we want to make SURE you let him know!

Just received in the mail was info and a picture of the Skimmer R/C Airboat, from Robinaire, P.O. Box 6766, Lake Worth, FL 33466-6766, phone (407)439-6965. The fiberglass hulled craft can't be flipped, and will literally swap ends at full speed. A natural for the R/C aircraft buff who wants to get into action boats, the Skimmer is powered by an .40 to .50 aircraft engine and prop, but you must use a surface frequency radio, it doesn't get *that* much airborne! Its length is 31 inches, beam 21 inches. Looks like it could be lots of fun!

LOOKING FOR MEMBERS

The Empire State Model Mariners, New York City's only R/C model boat club, is seeking new members. Check in with Nelson E. Cruz, Commodore, 4400 Beach 44th St., Brooklyn, NY 11224, phone (718)449-4481.

Nelson is also Regional Director of the SSMA (Scale Ship Modelers Association) for Region 2, which covers New York, New Jersey, Pennsylvania, and Maryland (Hmmm . . . what happened to Delaware?). •

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In Victoria the entire steam engine is **out in the open** in the forward section of the hull where it can easily be seen (and admired). The brass and painted metals, the wood boiler planking, the reflection of the burner flame in the metal floor pan, the steam mist pumping out around the cylinders — all these attractive details are well displayed in Victoria. The full scale Victoria was built in England by Simson, Strickland & Co. in 1912 as a private yacht. Mr. Krick tells us that it is now owned by "some American".

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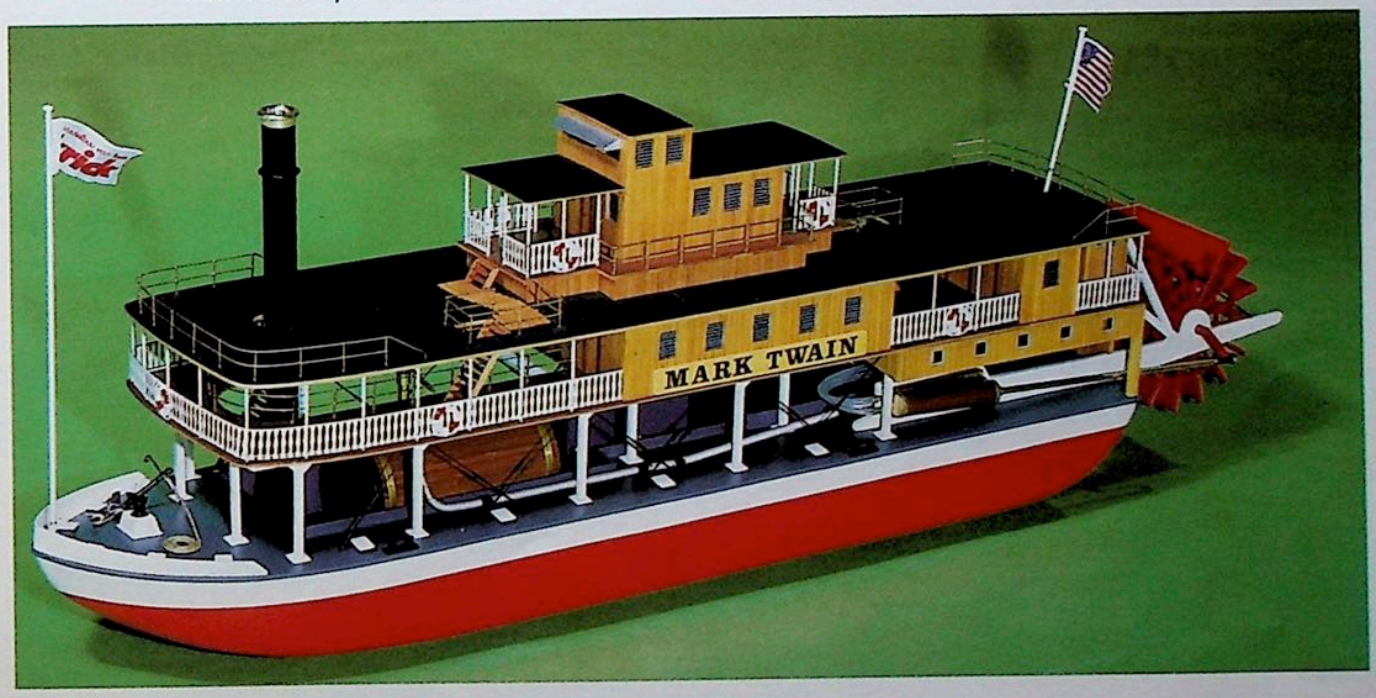

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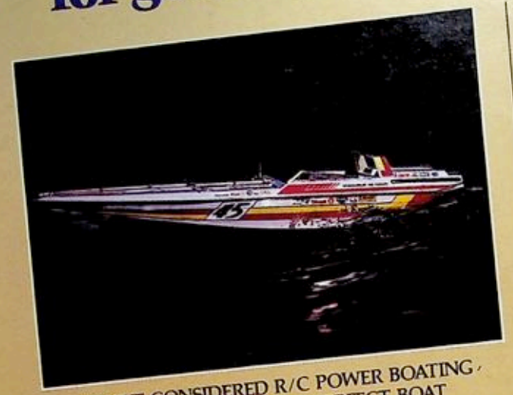

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